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CONTENTS

NO more perplexing problem has confronted the mechanical department officers of the railways than that of tender derailments. For years these officers, spurred on by frequent accidents due to this cause, have carefully studied it, and many suggestions have been made as to how the design or construction of the tenders could be improved to overcome the difficulty. In spite of all this, a study of the reports of accidents indicates that the tender is often the first part of the train to leave the track, indicating that there is still much to be desired in the way of improvement. E. W. Summers gives an interesting and rather convincing reason for tender derailments in a letter in another part of this issue. Briefly, he shows that the combination of a high spot in the track and the compression of the truck springs on the same side of the tender, due to a lurching or swaying movement, will produce a hammer blow of such large proportions that something must be distorted or broken. The logical solution of the problem is to provide a truck of such a design that the above condition could not possibly occur. Mr. Summers' suggestion is well worth careful investigation and study.

AS was stated in the paper on the Electrical Equipment of Railway Shops, read before the Western Railway Club by G. W. Cravens, and reported in our last issue, the adoption of the electrical system and various appliances depends upon the more or less limited experience of the users. In making improvements of this kind the subject should be thoroughly studied; experts should be consulted and the latest improvements of the various manufacturers should be considered. Many shops adhere strictly to the use of either the alternating or direct current system, whereas a combination of both oftentimes gives the best results. The introduction of automatic electrical devices has done a great deal in making the electrically equipped shop a necessity where economy is considered. Among these may be considered the push button feature for starting and stopping the machines. With this arrangement the workman will be able to devote more time to his output and will be more liable to stop the machine while it is not performing actual work, as it takes but a few seconds to get the most heavy machines up to speed with this device. In this way power is saved and the wear and tear of the equipment is reduced. It will also protect the machine and motor from overloads, for too great a current demand will automatically trip the switch. Mr. Cravens recommends the combination of the flaming arc for general illumination with tungsten clusters for group lighting, and the incandescent lights for individual machines. Good lighting consists in throwing the light on the work and not in the eyes of the workman.

THERE is probably no employee of a railway company who has work that is harder to perform satisfactorily and especially courteously than has the man in charge either of the information bureau of a railway in a large station or the parcels check room. The discourtesy that is so often noticed at a railway information bureau is explained and often extenuated by a reference to the difficulties of the work. These annoyances, however, are no greater than those of the men who are checking parcels and other hand baggage; and, added to the passenger's ignorance, hurry, unreasonable requests, etc., is the rather trying physical work of lifting heavy bags in the case of the men in charge of the parcels room. It is not, however, impossible to get men to do either of these services satisfactorily and courteously, and this statement is not based on theory. At the Grand Central station in New York is a parcels room that is as busy, probably, as any in the country, and yet the holder of this concession has succeeded in obtaining and training a force of men who do the work rapidly, accurately and quite uniformly in a courteous way. The first requirement is that the employees for such service must be very carefully selected. A nervous man is impossible in such a position, and this is equally true in the case of a railway information bureau in a large station or, as far as that's concerned, in the local ticket office in a large station doing a rush suburban service. After the proper men have been selected to do the work, they should be carefully trained. Lack of proper training of employees is often held up as one of the cardinal sins of the railways. Of course, each railway has its own rules and methods in regard to training; but it probably is a fact that on a great number of roads the training for such positions as those just mentioned is far from adequate. It is hardly necessary to enlarge again on the importance of such positions, from the railway company's point of view, or on the extent to which the public's opinion of railways is formed by the attitude of just such employees. The *Railway Age Ga-*

zette has often spoken earnestly on this point; but what it is desired to call attention to here is the fact that at the present time, in one of the busiest stations in the country, such training and selection of a certain class of employees has been successfully carried out, and the results are plain to anyone who uses that station.

LOCOMOTIVE FIREBOX TESTS.

RAILWAY officers at large are looking forward to the publication of the results of the locomotive boiler tests which were made at Coatesville, Pa., last spring, under the direction of Dr. W. F. M. Goss. The closing part of the test, including the spectacular attempt to blow up the two boilers of the radial stay and Jacobs-Shupert types, is familiar to our readers, a complete account of it having appeared in the *Railway Age Gazette* of June 28, 1912, page 1595. The crown sheet of the radial stay boiler was blown down, while the Jacobs-Shupert boiler came through the test uninjured, although the water was boiled from the boiler to such an extent that sufficient steam could not be obtained to furnish a draft to keep the fire going.

In a paper before the New York Railway Club last week A. W. Whiteford discussed the relation of locomotive boiler design to efficiency, maintenance and safety, and referred to the evaporative tests at Coatesville. The report made by Dr. Goss has not yet been published, in fact we are told that his statement of conclusions has not yet been completed, so that in some respects it might have been much better for Mr. Whiteford to have read his paper at a later meeting, or to have refrained from stating in so general terms such of Dr. Goss' results as he did, for railway men who are interested in the subject will want to have the complete data before them before drawing any conclusions as to the type of boiler best suited to their needs.

The most important statements made by Mr. Whiteford may be summed up as follows: At ordinary rates of combustion both types of boiler gives practically the same economy, with a possible slight advantage for the sectional boilers at higher rates when coal is used as the fuel; one foot of firebox heating surface is equivalent to 7.6 ft. of the tube heating surface, thus indicating the importance of a large firebox heating surface.

From the results of the final test there is little question but that the sectional boiler will be more safe than the ordinary radial stay boiler. The problem of maintenance, the remaining factor, is something that can only be decided by thorough trials in actual service. A. M. McGill, shop superintendent of the Lehigh Valley, said that sectional boilers had been in use on that road during the past five months and that very little scale had accumulated; and that no difficulty was found in washing the boilers out thoroughly. The master boiler maker of the same road, Thomas Lewis, said that the sectional boiler was easier to inspect than the radial stay. Mr. Whiteford mentioned an instance where the sectional boilers on the Santa Fe had a very much longer life than radial stay boilers in the same service. He also suggested that while the economy of the two types of boilers might be the same when both were in first class condition, as at the Coatesville tests, it was altogether probable that the sectional boiler would show up to much better advantage after the boilers had been in service a while, because of the fact that scale does not accumulate in the sectional boiler to the same extent as in the radial stay type and it can be kept cleaner.

George L. Fowler, who made a series of circulation tests on the boilers at Coatesville, found that the rate of flow of the water in the water leg of the firebox was extremely low—only a few feet a second—and that the stay plates used in the sectional boiler could not, therefore, affect the efficiency of the boiler by impeding the circulation.

It is expected that Dr. Goss' complete report will shortly be available, at which time we will review the tests more thoroughly.

AUTOMATIC STOP OR CAB SIGNAL?

THE automatic stop propaganda has made very slow progress. The experience on the underground lines of the Interborough in New York City has now been a familiar fact for eight years; numerous inventors have worked industriously in the whole field, and we now have a good variety of plans or methods; and a few experiments have been made on the lines of conservative railways, as was shown in our article of September 20; but still there is no general advance.

There are good reasons for this lack of progress. In the first place the best managed railways have made good records for safety without any mechanical check on the engineman. A second troublesome objection to the automatic stop is that, although it is simple in theory, there are serious difficulties which would surely be encountered in the management of long freight trains and in the arrangement of the signals and the stopping apparatus at and near junctions; and there is the general difficulty, at all places, of keeping up the very highest maintenance at all times. A third obstacle is the necessity of reducing the capacity of the railway by the use of the overlap.

All of these are weighty considerations. As compared with other operations performed by the human mind and hand, the best railways are able, for long periods, to show really high percentages of safety in obedience to signals. Well-known fast trains are run many thousands, and even millions of miles with no fatal failure. We are constantly demanding of the train operating department a very high degree of perfection, and this demand is met in a way which would be called marvelous were it not such a familiar fact. The tendency to stick to well tried means is not strange. In considering the second point we have to remember that stopping long and heavy freight trains by a quick application of the air brakes is a fine art which is not yet fully mastered. Numerous inventors promise an automatic stop which will apply the power brakes vigorously on one train and mildly on another; but this is a difficult problem also; and its solution would call for a long campaign. At junctions, where "blocking back" may be necessary every day, an overlap extends the distant signal so far back that the signalman would be liable constantly to stop heavy trains unnecessarily, and perhaps at some risk. As to the overlap, on those roads where stops are most needed the traffic is dense and the demand of the traffic manager is that trains shall be run as closely together as practicable. To do this, and at the same time use the overlap, necessitates shortening the blocks to the lowest limit; and if there are fast trains, the introduction of a series of short blocks makes it necessary to have two or more distant signals, which introduces an undesirable complication. And any unnecessary space between trains is a perpetual loss of efficiency.

In the presence of this formidable array of reasons for doing nothing, only the boldest among railway officers have felt warranted in developing the automatic stop; and even the bold ones have realized, of course, that except under comparatively easy conditions, as in the subways, anything like complete success must be far in the distance.

In this situation Mr. Cade, vice-president of the Federal Signal Company, and a veteran signal engineer, well known to railway officers, comes forward with what may be called a radical novelty. He proposes to abandon the attempt to make a machine take the place of a man. Instead, he would adopt a new method of making the man himself more surely to be depended upon. We print his letter on another page. Mr. Cade answers our question, Automatic Stop or Cab Signal? in favor of the cab signal, but when he gets into the cab he reverses the process, as it were. Instead of making the roadside apparatus go into the cab and affect the engineman, he has the engineman take action, in the cab, which will affect the roadside fixture.

This scheme has very attractive features. An automatic stop provides for cases where the engineman does not see and obey the visual signal. The proposed apparatus will make him heed it if he is alive and mentally competent; and, this much accom-

plished, the question of securing action in accordance with what the signal says may be said to be easily dealt with. And if the engineman is dead or has fainted, the apparatus will call the attention of the other men on the front of the train. As it is fair to assume that these other men, the fireman and one or more trainmen, would hear the sounds made by the audible apparatus, we may reasonably say that all failures of enginemen to see distant signals are provided against. Leaving out of account inveterate recklessness, we may say that a cab signal is as good as an automatic stop, if the engineman is not dead or unconscious; this being so, Mr. Cade's scheme will be as effectual as an automatic stop, except when three men, the engineman, the fireman and the front end trainman are all insensible or dead. On an electric car the passengers would take the place of the trainmen as reserve guards, as the audible apparatus, being sounded only very rarely, can be made loud enough to startle everybody within a hundred yards.

Every engineman has to do his work alone. His superior cannot be near him, and the monitorship of the fireman is of indifferent value. After years of use (in the printed book) of the rule requiring firemen to "call" signals to the enginemen, superintendents are far from agreed as to its worth, or as to how fully it can be applied to all situations, and how well it can be enforced. In this situation, surprise checking of enginemen has been our main recourse. This idea has been employed with much success now for a dozen years; but it is still far from being generally prescribed and carried out, and far from affording all the protection reasonably to be desired. Its satisfactory enforcement is full of perplexity. Mr. Cade's scheme at once provides *universal checking* in the place of occasional checking. He calls the engineman to account at every distant signal; and the distant is the vital signal. In short, the scheme here presented proposes to make the observance of visual signals so entirely satisfactory that the demand for an automatic stop will die out.

The first objection to Mr. Cade's scheme is that the apparatus does not report its own failures; it is not arranged on the "closed circuit" principle. This principle, which demands that any instrumentality which, by action or failure to act, can help a train along on its journey, shall instantly disclose its condition whenever it is out of order, so that its indication, favorable or unfavorable, cannot be depended on, is held very tenaciously by conservative signal engineers. It is made a first requirement, wherever possible. Mr. Cade, himself, has, no doubt, sworn by this principle all his life, and realizes its importance, for he is a conservative of the conservatives. There is also the objection to all devices requiring special equipment on engines, reinforced by general conservatism. To this last it seems sufficient to say that the sentiment in favor of any scheme of experimentation in this line which looks hopeful is now too strong to be ignored.

There is an answer also to the main objection; and it is not to be laughed out of court. Any proposal to depend on "open circuit" schemes is to be considered with great caution; but such dependence is not in practice the great and fundamental error which it is sometimes thought to be. It is not unknown in railway operation; it is a familiar fact. A track relay may stick and hold a signal at clear, and the dangerous condition not be disclosed. The signalman at an interlocking cabin has opportunity constantly to make various dangerous mistakes, and no one can prove anything against him. The safety of a locomotive boiler depends, in important features, on the unremitting vigilance of the engineman. But in all these things a high degree of efficiency is maintained, nevertheless. Mr. Cade holds that a high degree of efficiency can be maintained in the care of his adjunct to the fixed visual signal. He will be called upon to "make good." He does not describe the apparatus which he has in mind, but there is nothing inherently impracticable in the idea. In view of his knowledge and experience, and of the completeness with which he has met the views entertained by conservative railway officers, we may fairly say that his scheme should have a friendly reception. It is to be remembered that his adjunct is only an adjunct. If it should fail entirely, in a given case, there is a strong presumption that, if the apparatus has been well cared for, the engineman would *not* fail on that same occasion. A failure of the new auxiliary apparatus would not be equivalent to a positive proceed signal (as in the case with an automatic stopping apparatus which gives no proceed indication). The engineman would not know that it failed. In fact, he cannot depend on it at all. In the ordinary routine he knows nothing about it except that it is the invisible reason why he is required to be very careful to do his duty as he approaches every distant signal.

And to make men careful, when the problem is taken up in the right way, is not such an utterly hopeless task as we often assume it to be. A "smash signal" at a certain drawbridge on one of the busiest railways in the country, performed its functions untouched by a locomotive for over twenty years. If it be said that enginemen are always much more careful at drawbridges than at places which seem to them less dangerous, we may reply that with Mr. Cade's scheme, if it works out well, we can, at an expense not entirely beyond reason, make the entrance of every block section in a sense as dangerous as a drawbridge. "Dangerous," we mean, to the engineman; the danger of losing his job. Making actual danger would be a questionable policy. It is possible that we do too much of that now, in the use of derails.

MISSOURI PACIFIC.

THE annual report of the Missouri Pacific and of the St. Louis, Iron Mountain & Southern, which are together operated as one property, is a rather unusual account of the benefits resulting from improvements made in the two previous years and showing in a year while further extensive improvements were being made. It is seldom that a property which is still undergoing heavy improvement work reflects, in increased gross business handled at a decreased cost, the effect of very recent betterment work. Generally the increased cost of handling traffic due to additional betterment work offsets the benefits due to work just completed. Possibly the fact that there was such a wide margin for improvement on the Missouri Pacific accounts for the showing that was made in the fiscal year ended June 30, 1912.

The Missouri Pacific and the St. Louis, Iron Mountain & Southern together operate 7,231 miles. Although the road runs through highly competitive territory in places, its average ton mile rate is not low, being last year 8.24 mills. As will be seen from the map, the road connects the best traffic producing cities in the Middle West, and in most of these cities it has terminals of its own, which in many cases are very advantageously located as compared with its competitors. It enters the Illinois coal fields; and in 1912, 21 per cent. of the total tonnage carried was bituminous coal, with 16 per cent. of the total tonnage products of agriculture and only 14 per cent. manufactures.

In 1912 operating revenues amounted to $54,500,000, an increase of $1,730,000, or 3.27 per cent., over 1911. Total operating expenses amounted to $41,280,000, a decrease of $2,050,000, or 4.73 per cent. After the payment of fixed charges and rentals there was a net corporate loss of $1,980,000, as compared with a net corporate loss in 1911 of $5,230,000. This is a decrease of 62.18 per cent. in loss.

The increase in revenues came from an increase in freight traffic amounting to 3.35 per cent., and an increase in average length of haul amounting to 12.64 per cent. Thus the revenue tons carried one mile totalled 4,794,000,000 in 1912, an increase of 402,000,000 ton miles, or 9.15 per cent.; the average receipts per ton per mile being slightly less (3.85 per cent.) in 1912 than in 1911, and, as was previously mentioned, amounting to 8.24 mills in 1912. Passenger business decreased, passenger mileage amounting to 463,000,000 in 1912, as compared with

488,000,000 in 1911. Of course, passenger service could not be cut down to offset the decrease in business.

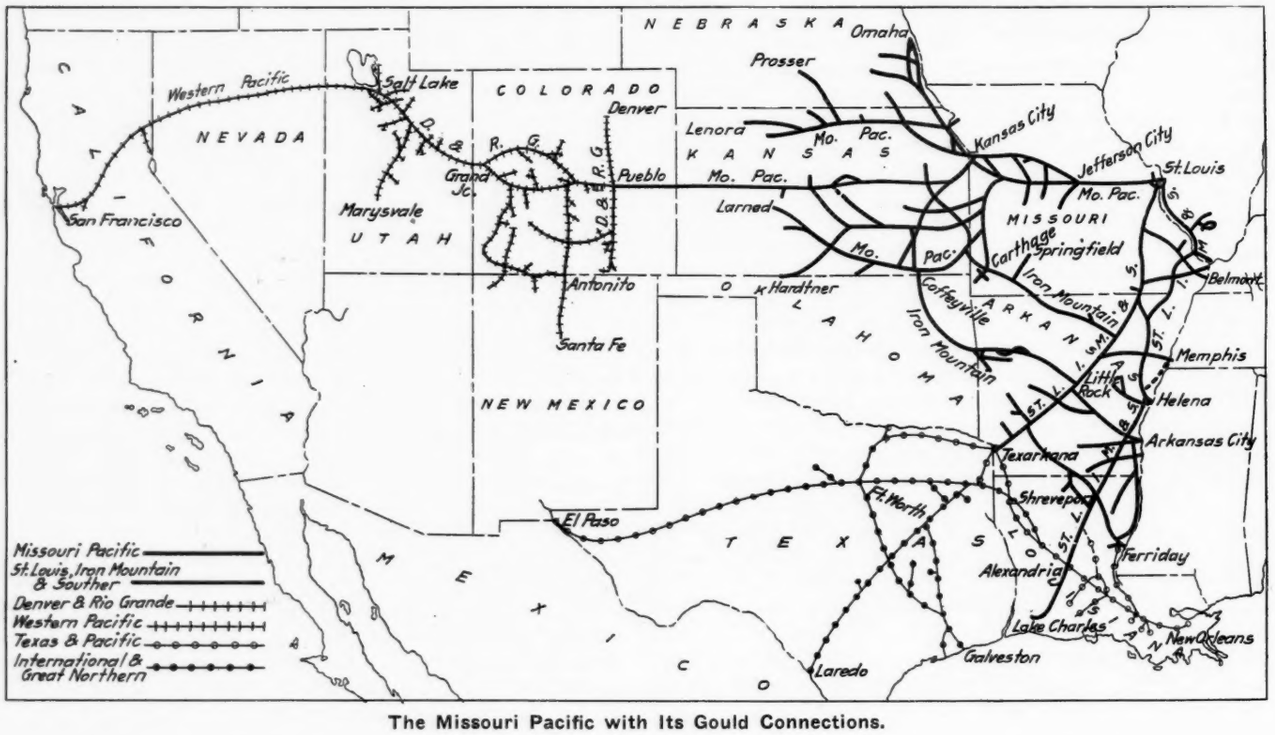
The most important increase in tonnage was in bituminous coal. This tonnage amounted to 4,230,000 tons in 1912, an increase over 1911 of 36.5 per cent. It is probable that this remarkable increase in coal tonnage is due to the fact that owing to the improvements made in 1910 and 1911 the Missouri Pacific is now able to handle coal tonnage, whereas in 1910 it was not in physical shape to take care of this low-grade traffic. It is hard to overestimate the importance of such an increase as this in coal traffic in considering what the road may do as compared with what it has done in the past. Crop prospects in the territory served by the Missouri Pacific were never brighter than they are for the present year. In 1912 the road carried 3,290,000 tons of agricultural products, or about 8.6 per cent. less than in 1911. Agricultural products last year formed 16.3 per cent. of the total tonnage. With prospects for very much increased tonnage of agricultural products in the 1912-13 year, and with no present prospect of a let-up in the demand for bituminous coal for manufacturing purposes as well as domestic purposes, and with the aid of the very extensive improvements that have been made during the year 1911-12, the prospects for the fiscal year that will end June 30, 1913, are probably better than they ever have been for the Missouri Pacific.

In studying the annual report for 1912 one constantly has to bear in mind the fact that comparisons between 1912 and 1911 are for the Missouri Pacific, and that however much the improvements themselves call for admiration and enthusiasm, the property still has a long way to go before it can be considered in the same class, either as a railway or as an investment, as many of its competitors. Even in 1912 the combined Missouri Pacific and St. Louis, Iron Mountain & Southern earned only $7,538 per mile operated. The average revenue train load was 333 tons; the average tractive power of its locomotives was 28,319 lbs. Only 38 per cent. of the total track was laid with 85-lb. rails or heavier, and 32 per cent. was laid with 56, 54 and 52-lb. rails. It will take years of improvement and betterment to put the property in shape to compare with the Union Pacific.

The remarkable thing about last year's operations, however, was the fact that such marked improvement in operating efficiency was shown so soon after the program of improvement was commenced under the new régime.

Additions and betterments to roadway and track cost $4,110,000. A total of 542 miles of track was ballasted largely with chatts, cinders and gravel; embankments and cuts have been widened on 566 miles; 322 miles of track were laid with new 85-lb. rail; 69 miles of second track were completed; 1,403 miles of manual telephone block signals were established.

Missouri Pacific in 1912 bought its first heavy power. One Mallet was bought, 50 Mikado locomotives and 14 Pacific type, the latter having an average tractive power of 31,500 lbs. The improvement in train loading has already been mentioned. Car loading was also heavier, due probably, in part at least, to the increase in proportion of low-grade freight. The Missouri Pacific has a very light freight and passenger density. In 1912 the average ton miles carried per mile of road amounted to but 663,051. This, however, is an increase of 9.21 per cent. over 1911, and the passenger miles per mile of road amounted to 64,048, a decrease of 5.11 per cent. To carry 9.15 per cent. more ton miles in 1912 than in 1911, the Missouri Pacific used 6.89 per cent. less freight train miles. Average loaded cars per train totalled 19.70 as against 17.93 the year before, an increase of 9.87 per cent. The company, however, did not increase its per cent. of loaded car miles to total car mileage.



The Missouri Pacific with Its Gould Connections.

During the year, the Missouri Pacific sold $4,000,000 bonds and $1,553,000 equipment trust obligations. There was on deposit with trustees at the end of the year $5,450,000 cash available for additions and betterments. The Missouri Pacific, itself, excluding the Iron Mountain, had on hand $1,480,000 cash, with no loans and bills payable, and total working liabilities of $5,820,000. The St. Louis, Iron Mountain & Southern had on hand $830,000 cash, with a little over $800,000 loans and bills payable, which has been paid off since the close of the fiscal year through the sale of securities, and total working liabilities excluding the loans and bills payable of $5,267,288. Although the working capital of the Missouri Pacific and the Iron Mountain combined is still much too small for a property carrying on the business that this system does, the companies are in very much better financial shape than they have been for a number of years, and from a study of the income account one is inclined to agree with Presi-

dent Bush that the close of the fiscal year has established a conspicuous mile post in the history of the property.

The following table gives the principal figures for operation for the Missouri Pacific and the St. Louis, Iron Mountain & Southern in 1912 as compared with 1911:

	1912.	1911.
Average mileage operated	7,231	7,235
Freight revenue	$39,514,356	$37,629,213
Passenger revenue	10,662,443	10,917,851
Total operating revenues	54,503,250	52,776,593
Maintenance of way and structures	8,664,769	8,984,132
Maintenance of equipment	8,321,787	8,283,521
Traffic	1,358,014	1,410,780
Transportation	21,268,314	22,745,409
Total operating expenses	41,280,592	43,329,936
Taxes	2,242,380	1,983,789
Operating income	10,858,425	7,376,785
Gross corporate income	13,095,886	9,186,343
Net corporate loss	1,979,091	5,232,539

CHESAPEAKE & OHIO.

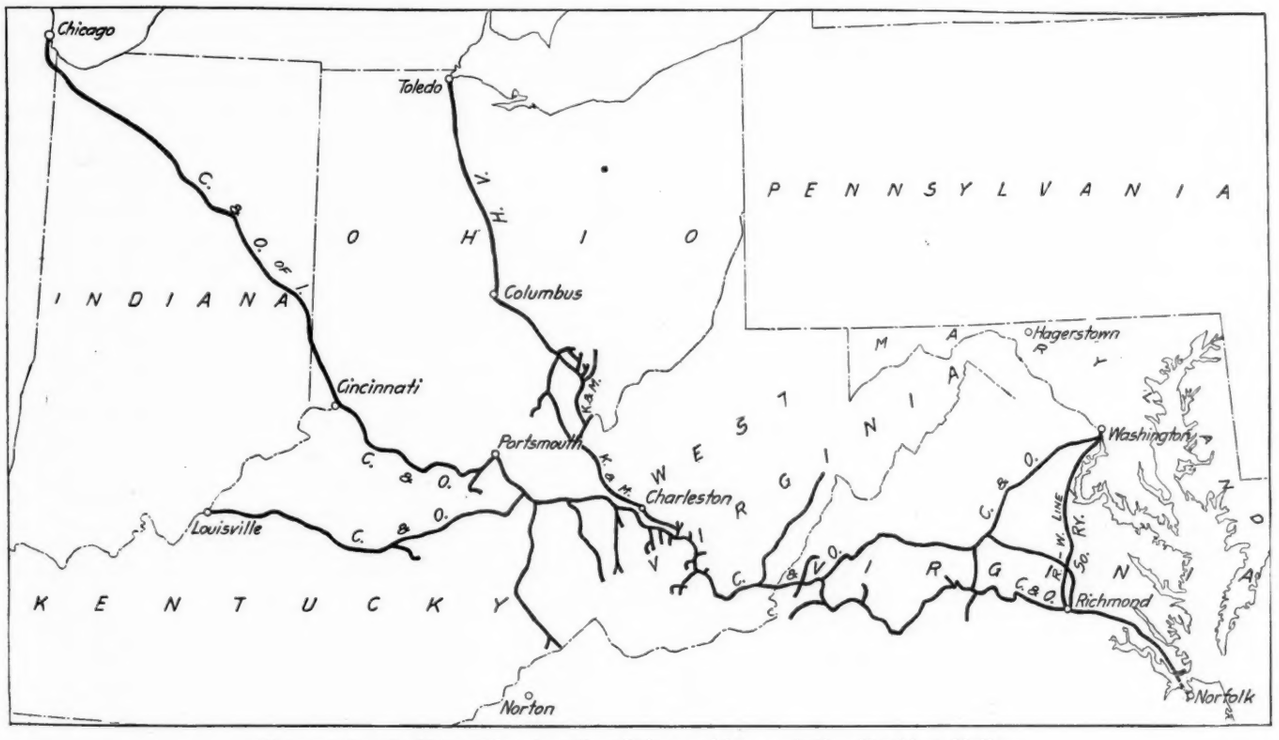
DESPITE the fact that the Chicago line of the Chesapeake & Ohio has not begun to yield any return to the parent company on the sums invested in this property the C. & O. earned in the fiscal year ended June 30, 1912, a net available for dividends of $4,270,000, or $1,050,000 more than in the year before. This is equivalent to 6.81 per cent. on the total stock outstanding, and is after the payment of fixed charges, which include the interest on the cost of the Chicago line. It will be recalled that in the fiscal year ended June 30, 1910, the Chesapeake & Ohio earned over 10 per cent. on its stock. In 1911, the first year in which the operations of the Chicago line were included, the company earned but 5.14 per cent. after paying, however, the interest charges on the cost of the new line. In both 1911 and 1912 interest charges include the carrying charges of the Hocking Valley majority stock and the half interest held in the Kanawha & Michigan.

In 1911 not only did the C. & O. have the financial burden of the Chicago line to bear, but the fact that this line was not in physical shape to handle the traffic which the C. & O. could turn over to it made the operations of the C. & O. *itself* probably somewhat more expensive, and when the figures were combined made the average cost per ton mile of operating the entire property very considerably higher. This, of course, should be borne in mind in comparing the figures in this year's annual report with those for 1911; but even so it is not by any means sufficient to explain such a remarkable increase in operating efficiency as is shown by an increase in the average revenue train load of 100 tons, bringing the average for 1912 up to 756 tons. Neither is it probable that the improvement in condition and operation of the Chicago line is sufficient to account for an increase last year of from $32,580,000 in total operating revenues in 1911 to $34,290,000 in 1912. This increase occurred in a year that was not generally prosperous for railways, and in a year in which the weather was quite unusually severe, with consequent increased difficulties in handling business.

The Chesapeake & Ohio operates 2,306 miles of road, including the Chicago line, but excluding, of course, the Hocking Valley, which is controlled but not operated as part of the C. & O. The C. & O. now has two tracks all the way from Newport News, Va., to Cincinnati, Ohio, with the exception of nine miles in the mountains of West Virginia, which at present there is no immediate intention of double-tracking. The Chicago line is single track, with the exception of its entrance into Chicago.

The freight density, that is, ton miles carried per mile of road, was 2,960,000 in 1912, an increase of 8.4 per cent. over 1911. The average revenue per ton per mile for coal was 3.17 mills in 1912 and 3.22 mills in 1911; and the average revenue per ton per mile for freight other than coal was 6.39 mills in 1912 and 6.45 mills in 1911. Of the total tonnage carried, 68.11 per cent. is bituminous coal, nearly all of which originates on the lines of the C. & O. The tonnage of bituminous coal in 1912 amounted to 17,810,000 tons, as compared with 15,750,000 in 1911.

Besides its heavy freight density, the C. & O. has a passenger density of 110,000 in 1912, a slightly lower density than in 1911. The C. & O. operates in highly competitive territory. It is paralleled as far west as Cincinnati, at places quite closely, by the Norfolk & Western; its coal has to compete with the coal of both the Norfolk & Western and the Pennsylvania, as well as the Baltimore & Ohio; so that its prospects for higher earnings in the future depend on its ability to handle ton miles



Chesapeake & Ohio; Showing the Chicago Line and the Hocking Valley.

and passenger miles at a smaller cost and on the advantages that the property may derive from having become a through trunk line from the Atlantic coast to Chicago.

One further important source of future revenue is the investment in Hocking Valley. This company paid in 1912 7 per cent. dividends and is earning a very comfortable surplus over and above these dividends. As an investment alone, even putting aside the advantages of having close traffic relations with a line to Toledo, the purchase of a controlling interest in the stock was pretty surely a good one for the C. & O.

In the task of reducing the cost of handling each unit of traffic, the work of the management of the Chesapeake & Ohio has met with a very considerable degree of success. As was mentioned, the company earned total operating revenue in 1912 amounting to $34,290,000, as compared with $32,580,000 in 1911. The total ton mileage amounted to 6,690,000,000, as compared with 6,083,000,000 in 1911; and the number of passengers carried one mile amounted to 252,000,000 in 1912 and 253,000,000 in 1911. Total operating expenses amounted to $22,640,000 in 1912 and to $21,790,00 in 1911. Although the ratio of passenger business to freight business decreased, it was impossible to reduce passenger service to correspond with the decrease in business. As a matter of fact, passenger train mileage amounted to 5,100,000 miles in 1912, as compared with 4,880,000 in 1911. Total operating expenses amounted to 3.38 mills per ton mile in 1912 and to 3.58 mills per ton mile in 1911; and the fact that it was necessary to increase passenger service makes the *showing* of saving 14 per cent. in cost of handling ton mileage by no means as great as was probably the actual saving. With an increase of 10 per cent. in ton mileage, there was a decrease of 4.6 per cent. in freight train mileage. There was an increase of 10 per cent. in the average number of loaded cars in train, with an increase of 6.6 per cent. of empty cars, and a fairly large decrease in miles made by locomotives in switching service. The increase in revenue train load of 100 tons has already been commented on.

There have been two important improvements made in the property. An extensive yard and terminal have been built 12 miles east of Cincinnati, and yards have been built at Boston, Md.. These yards were badly needed. The traffic handled through Cincinnati has to be moved in a rather roundabout way, and westward tonnage has to be pushed up a very steep grade just outside of Cincinnati. By making up trains outside of Cincinnati, and using pushers to get them up the hill, some of the difficulties of getting traffic across the city are obviated, and these difficulties are not allowed to interfere in any way with the operation of any except short mileage directly concerned.

Operating expenses amounted to $22,640,000 in 1912, an increase of 3.86 per cent., due largely to an increase in the cost of transportation probably because of the increased passenger service and to an increase in the cost of maintenance of equipment. The fact that the company had in operation for the first time during an entire year 26 Mallet locomotives may have somewhat increased the cost of repairs; but if this is a fact, this additional repair cost was probably far more than offset by the economies effected through increased train loads made possible by the use of this type of locomotive. Maintenance of way amounted to $3,980,000 in 1912, a decrease of $160,000 from the amount spent in 1911. The decrease was due almost entirely to the fact that a smaller amount of new rails was laid, with a corresponding decrease in cost of extra gang labor.

The fiscal year 1913 should see the C. & O. past the last of the important difficulties which were attendant on the plans of the management which acquired control in 1909. These plans included the acquisition of a line from Cincinnati to Chicago which should make the Chesapeake & Ohio a through trunk line; the acquisition of a line suitable for sending heavy shipments of coal to the Lakes; and making the C. & O. a double-track line, of the standard indicated by 100-lb. rail, from tidewater to Cincinnati. The physical work involved in carrying out these plans is largely done; and while the financing has been done in good part, there still remains some further financing to be done.

In 1911 and 1912 the company sold $19,500,000 secured 4½ per cent. notes, which will mature in 1914. These notes are secured by $22,300,000 first lien and improvement mortgage 5 per cent. bonds, due 1930. Cash on hand at the end of 1912 amounted to $1,010,000, as compared with $9,370,000 on hand at the end of 1911. Total working assets in 1912 were $5,660,000, and total working liabilities $5,520,000. There are loans and bills payable included in the working liabilities of $85,000 only.

The C. & O. is not at all a heavily capitalized property when it is considered that 655 miles of it are double track through difficult country. Funded debt, including rentals capitalized at 5 per cent., and equipment certificates, amounts to $75,912 per road mile operated; and stock outstanding to but $27,230. The total, therefore, $103,142, is not great. For instance, the Norfolk & Western has only about $53,582 of funded debt per mile, but $53,346 of stock outstanding per mile. The C. & O. would, however, be in a better position to withstand any unforeseen drain on its resources, or some unforeseen cutting down of revenue, if the proportion of bonded debt calling for fixed charges were smaller. The C. & O. has outstanding $31,390,000 convertible 4½ per cent. bonds which are convertible up to 1920 into stock at par. C. & O. common is now selling in the neighborhood of 82, and the convertible bonds are selling at 93⅝. These bonds have sold as low as 92⅝ since January. A rise, therefore, in the price of the stock of at least 15 points would probably be necessary to make it profitable for any great number of the holders of these bonds to convert them into stock. The possibility of such a rise depends, of course, on the general course of prices for railway securities, and on the amount of return that the C. & O. will get on its investment in the Chicago line and the Hocking Valley; disregarding, of course, the increase in business which might fairly be expected to follow from the present bright prospects for good crop conditions and largely increased buying power of consumers, and the continuation of the present activity in manufacturing industries.

The following table gives the principal figures for operation for the C. & O., including its Chicago line, in 1912, as compared with 1911:

	1912.	1911.
Average mileage operated	2,263	2,229
Freight revenue	$27,261,475	$25,590,027
Passenger revenue	5,505,536	5,512,932
Total operating revenue	34,289,870	32,583,411
Maint. of way and structures	3,981,646	4,141,572
Maint. of equipment	6,724,460	6,198,825
Traffic	636,967	615,338
Transportation	10,503,415	10,044,173
Total operating expenses	22,635,681	21,793,615
Taxes	1,014,220	1,065,853
Net operating income	10,639,969	9,723,943
Net corporate income	4,274,206	3,228,285
Dividends	3,139,628	3,139,625
Surplus	1,134,578	88,660

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.

THE Chicago, St. Paul, Minneapolis & Omaha is a road operating 1,745 miles of line in Wisconsin, Minnesota, Iowa, South Dakota and Nebraska. It is a subsidiary of the Chicago & North Western and, as will be seen on the map published with the comments on the North Western's report, it furnishes a line from Omaha through Sioux City to Minneapolis and St. Paul, and a roundabout line from St. Paul to Duluth. The company in its annual report does not classify its freight tonnage; but from the territory through which the Omaha operates, we may be quite sure that a very considerable part of its tonnage is furnished by grain and agricultural products.

In the fiscal year ended June 30, 1912, the road had to contend with very severe winter weather. Crops were poor in some states and there were still further increases in labor costs. Total operating revenue amounted to $15,140,000, a decrease from 1911 of $960,000. Over 85 per cent. of the decrease in freight revenue was caused by decrease in tonnage

from products of agriculture, the annual report says. As will be seen by the table at the end of these comments, passenger revenue was slightly greater in 1912 than in 1911. Total operating expenses amounted to $10,470,000, a decrease of $190,000. There was an increase in the cost of labor, due to higher rates of compensation, aggregating $129,000, and a saving made of $37,000 through less time worked by employees, making a net increase in labor costs of $92,000.

The decrease in expenses was due to decreases in the cost of maintenance; transportation having cost $6,280,000 in 1912, which is more by $128,000 than the cost in 1911. The net charge for rails was more in 1912 than in 1911, due entirely to the greater value of old rails (old rails and other items) released; new rail costing but $245,000 in 1912, as against $333,000 in 1911. There was a substantial decrease in the cost of ties and ballast, and bridges, trestles and culverts. The increases in cost of transportation were due to higher labor costs already mentioned and higher fuel costs.

The tons of freight carried one mile totaled 1,092,000,000 in 1912, a decrease from 1911 of 6.79 per cent. The mileage of freight and mixed trains totaled 4,383,000, an increase over 1911 of 2.58 per cent. This increase in freight train mileage, at the time when traffic was smaller was due to the very severe weather in 1912, as compared with 1911, and the increased difficulty of handling traffic under such conditions. The average train load decreased from 274 tons in 1911 to 249 tons in 1912. Carloading, on the other hand, was better, the average being 17.33 tons per loaded car in 1911 and 17.62 tons in 1912. This shows that there was a much larger proportion of empty car mileage last year than in the year before, due to a decreased tonnage of agricultural products. The average revenue received per ton per mile was 8.68 mills in 1912, as against 9.02 mills in 1911. Although there was a slight increase in passenger revenue, the number of passengers carried decreased, and the passengers carried one mile totaled 221,000,000 in 1912, a decrease of 5.21 per cent. from 1911. The average fare per mile was 2.06 cents in 1912, as against 1.92 cents in 1911.

During the year the company spent $2,436,000 for additions and betterments, of which $365,000 was for additional equipment. The Omaha is carrying on considerable double track work, mentioned in Railway Construction news. There was spent last year $719,000 on the second track from Merrillan, Wis., to Wyeville; $319,000 on second track from Truax, Wis., to Northline, and $495,000 for double track line from Eau Claire, Wis., west. Although there was a slight deficit in 1912 after the payment of 7 per cent. dividends on both common and preferred stock, the Omaha is a well-to-do road and a lightly capitalized one. At the end of 1912 there was $3,940,000 cash on hand and a total, including the cash, of $10,560,000 working assets, while total working liabilities amounted to but $1,980,000. During the year there were sold $5,000,000 5 per cent. debenture bonds of a total authorized issue of $15,000,000 debenture bonds.

The prospects for good earnings this year on the Omaha are very much improved indeed over what they were at the beginning of the fiscal year ended June 30, 1912. Crops through its territory are in very excellent condition; the double track work that the company has been doing should aid materially in handling the increased tonnage offered, and so severe a winter as last year is unusual.

The following table shows the principal figures for operation in 1912, as compared with 1911:

	1912.	1911.
Average mileage operated	1,745	1,743
Freight revenue	$9,478,792	$10,563,204
Passenger revenue	4,551,594	4,475,419
Total operating revenues	15,135.426	16,092.852
Maint. of way and structures	1,684,548	1,965,394
Maint. of equipment	1,796,694	1,863,984
Traffic	320,889	285,537
Transportation	6,283,448	6,155,616
Total operating expenses	10,466,216	10,656,054
Taxes	782,846	730,808
Operating income	3,881,631	4,693,452
Gross corporate income	4,122,304	4,833,220
Net corporate income	2,084,603	2,816,385
Dividends	2,086,910	2,086,910
Surplus	*2,307	729,475

* Deficit.

CHICAGO & NORTH WESTERN.

THE Chicago & North Western operates 7,859 miles of road, a very large part of which may be classed as branch line mileage, with, however, a very important double track main line from Chicago to Omaha. The North Western has close traffic relations with the Union Pacific on the west and the New York Central Lines on the east. It has, therefore, in many respects the dual character of a transcontinental road and a granger of the Middle West.

Before the Chicago, Milwaukee & St. Paul built its extension to the Pacific coast, it was customary to compare the North Western and the St. Paul. Both were conservatively capitalized, "strong roads." Both had a long record of dividends, and the securities of both were considered as high class investments suitable for those dependent on income. At the time that the St. Paul built its extension to the coast, there was talk of the North Western's also building, or linking up, an extension westward. It is doubtful whether this was ever seriously considered; but, at any rate, the showing made by the North Western in the fiscal year ended June 30, 1912, would tend to show the wisdom of the management in conserving its resources for the development of its own property rather than making extensions.

Like other granger roads, the North Western suffered considerably from the severity of the winter. Total operating revenues amounted to $73,700,000, as against $74,920,000 total revenues in 1911. This is at the rate of 9,378 per mile of road in 1912, and $9,706 per mile of road in 1911. The loss in gross was due to a shorter average haul on the traffic carried. The total number of tons carried amounted to 37,270,000 in 1912, an increase over 1911 of 1.45 per cent.; and the average revenue per ton per mile was 9.1 mills in 1912, as against 9.0 mills in 1911. The average distance each ton was carried, however, was 138.11 miles, a decrease of 6.63 per cent.

Operating expenses amounted to $52,700,000 in 1912, a decrease of $310,000 from 1911. The operating ratio in 1912 was 71.51 per cent. This seems high when compared with the Union Pacific or the Northern Pacific. It is due to the fact that neither the character of the traffic, of which low grade freight forms a comparatively small part, nor the large branch line mileage, permit of heavy train loading. The average revenue train load was 299 tons in 1912, as against 277 tons in 1911. The fact that the North Western handles high class through business on a fast schedule also tends to prevent heavy train loading. An increase, however, in the train load of 8 per cent. from 1911 to 1912 is an accomplishment not to be passed over without mention.

The decrease in expenses came from a decrease in amounts spent for maintenance of way, largely due to smaller replacement of rails and fewer ties put in track in 1912 than in 1911, and a consequent saving in labor for roadway and track. Labor costs, however, as a whole increased net by $330,000, there being an increase of $471,000, due to higher rates of compensation, and a partially offsetting saving of $140,000, less time worked by employees. Maintenance of equipment cost more by $263,000 last year than the year before and totaled in 1912 $9,570,000. The severe winter weather must have affected the cost of repairs of locomotives to a considerable extent. The increased cost of maintenance is not, therefore, as large by any means as might have been expected. The North Western has for a number of years maintained its equipment on a very economical basis.

There was a smaller ton mileage handled, but an increase in

the passenger mileage amounting to 2.47 per cent. Transportation expenses totaled $30,920,000 in 1912, an increase of a fraction of 1 per cent. There was a saving in fuel costs of $303,000, which was slightly more than offset by an increased amount paid to labor and paid for supplies and miscellaneous items.

The Chicago & North Western does a large and, in proportion to freight business, an important passenger business. Revenue from passengers in 1912 amounted to $19,560,000, an increase of 2.28 per cent. The number of passengers carried totaled 31,530,000, an increase of 3.94 per cent.; but there was a decrease of 1.41 per cent. in the average distance traveled. The average rate per passenger per mile remained the same in 1912 as in 1911; namely, 1.81 cents. The average distance traveled in 1912 was 34.28 miles.

The balance sheet of the North Western for June 30, 1912, is the best possible statement of the underlying strength and sound financial position of the company. There was $15,270,000 cash on hand, with total working liabilities of but $9,700,000. In addition to the cash, there was in the treasury $2,340,000 North Western stock and $5,910,000 North Western general mortgage bonds. Total working assets, including the cash and securities just mentioned, amounted to $49,060,000. After paying 8 per cent. dividends on the preferred stock and 7 per cent. on the common, there was a surplus for 1912 of $570,000.

The addition and betterment work that has been carried on is mentioned in Railway Construction news. The largest and most important expenditure during the year was for the Milwaukee, Sparta & North Western, the acquisition of which was commented on in these columns in connection with the annual report for 1911. The expenditure for this uncompleted road to date has been $14,510,000. The North Western has assumed $15,000,000 Milwaukee, Sparta & North Western first mortgage bonds that were issued during the year and sold to the public.

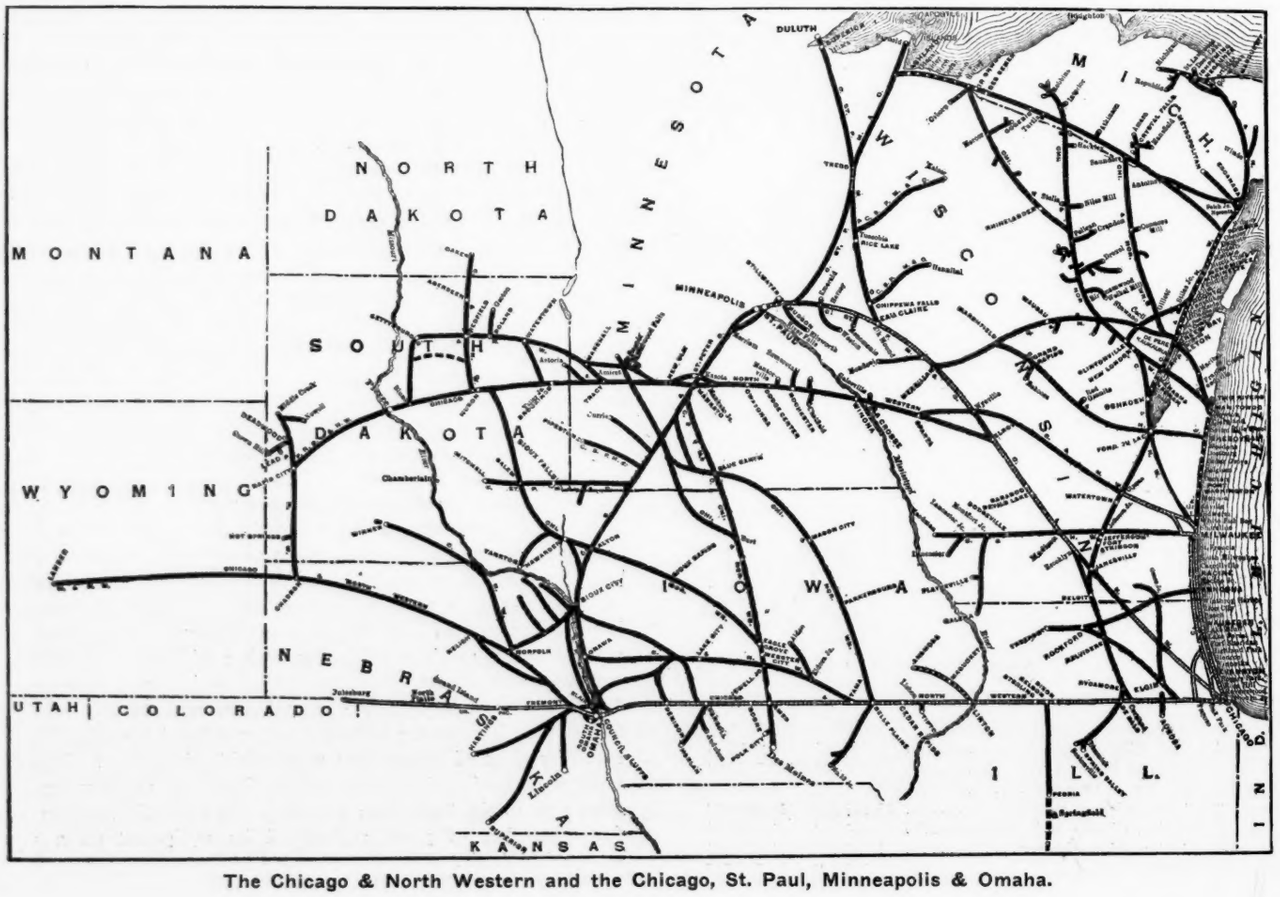
The following table shows the principal figures for operation in 1912, as compared with 1911:

	1912.	1911.
Average mileage operated	7,859	7,719
Freight revenue	$46,691,540	$49,024,958
Passenger revenue	19,555,567	19,118,884
Total operating revenues	73,698,592	74,918,186
Maintenance of way and structures	9,368,721	10,002,232
Maintenance of equipment	9,569,853	9,307,196
Traffic	1,340,086	1,232,016
Transportation	30,924,938	30,856,864
Total operating expenses	52,701,843	53,012,710
Taxes	3,422,838	3,116,034
Net operating income	17,540,872	18,735,765
Gross corporate income	20,794,649	21,769,231
Net corporate income	11,467,331	12,603,100
Dividends	10,899,615	10,899,615
Surplus	567,716	1,703,485

NEW BOOKS.

How to Analyze Railroad Reports. By John Moody. Published by the Analyses Publishing Co., New York City. 218 pages. 7 in. x 5 in. Flexible leather binding. Price, $2.50.

This little book contains, with certain additions, the introduction to Moody's Analyses of Railroad Investment, which is published annually. The larger annual work was reviewed in our issue of April 19, page 881. There is one additional chapter in the smaller book, on relative values and a discussion of the railway mile. There is also an appendix giving the names of the primary accounts prescribed by the Interstate Commerce Commission for the classification of operating revenues, operating expenses, revenues and expenses of outside operations, and expenditures for construction of road and equipment. The smaller book forms a handy and useful text book for the student who desires to learn how to go about forming his own judgment of the value of railway securities.



The Chicago & North Western and the Chicago, St. Paul, Minneapolis & Omaha.

Letters to the Editor.

A PROPOSED IMPROVEMENT ON THE CAB SIGNAL.

NEW YORK, September 23, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

The statement on page 373 in your issue of August 30 that, "The time has come when it behooves railway managers to give serious consideration to the subject of automatic train control," being undoubtedly true, I desire to ask your readers to consider the matter of automatic train control from a somewhat different view-point than the one from which it is now generally considered.

The opinion seems to prevail that if any engineman fails to obey a signal in the stop position, you should automatically stop the train, taking the control of it away from the engineman.

I believe that it will be agreed that the operation of the present automatic block system is so nearly perfect that if the information the signal conveys is obeyed there will be very few accidents of the kind that has caused the demand for automatic stops. I also believe that it will be agreed that the engineman of today is a most conservative, sober and careful individual, and that it is impossible to find anyone who appreciates more fully than he the value of the lives entrusted to his care. If this view is a correct one, then I believe an engineman very seldom, if ever, wilfully causes an accident by knowingly passing a signal in the stop position.

My suggestion is that when an engineman proves that he is likely to pass a signal at stop, he should be warned of what he is about to do a sufficient time in advance to enable him to stop at the home signal. We now depend entirely on the engineman seeing the signal in the caution or stop position; and if he fails to see it then an accident may result. My idea, for the consideration of your readers, is briefly as follows:

If the engineman fails to *see* a signal in the caution or stop position, why not give him a sound to guide him; place at the distant signal a sound-producing device operative when the signal is in the caution position. If the engineman, on approaching the signal observes it, he should be required to cut out the sound-producing device; and if he fails to cut it out, then the sound will be given and he will be warned that he has not observed the signal; and he should then be required to bring his train to a stop as quickly as possible; that is, before he reaches a stop signal. The sound can be made as loud as desired.

I understand, of course, that this will bring up a great many questions; such as, What acts should the engineman perform before he operates the cut-out device? Shall he shut off steam and apply the brakes, or perform some other act to insure that he is fully alive to what he is doing when he operates the cut-out? Shall the sound also be given in the event of the train passing a signal in the stop position, arranging the apparatus so that the engineman alone cannot cut it out? How can the cut-out be operated? Who shall be directed to stop the train if the engineman fails to do so after the caution or stop sound is given? What means of checking should be provided if the engineman observes the position of the signal, cuts out the sound, then (which is exceedingly unlikely) restores his apparatus and goes recklessly on, regardless of the information he has accepted? These and other questions will have to be considered by the operating and engineering departments of the railways.

The first and most important question, to my mind, is: Would it not be better when an engineman fails to observe the caution or stop position of a signal, to warn him (and others within hearing of the sound) that he has failed to observe it, giving him time to correct his error, rather than to wait until he has passed a signal at stop and then take from him the control of the train and attempt to automatically stop it in the hope that it will be stopped before it has collided with a preceding train? If I am right in my view that it is more desirable to warn him than to stop his train, then I am confident that the certainty of detection, in the event of the engineman failing to do what is required of him, will give increased obedience to signals; and that an apparatus to carry out this idea can be designed and operated so as to be quite as reliable as is the best made automatic block signal.

JOHN T. CADE,
Vice-President, Federal Signal Company.

A FORTUNATE WRECK.

PITTSBURGH, Pa., September 20, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

Some months ago, just after daybreak and shortly after I had awakened on a Pullman sleeper, an emergency brake application was made and a slight bump slid my head against the head board of the section. We were standing still, stopped from a 55-mile clip in less than a train length. I was sure that the tender must be off the rails, and as I had been wanting to get information of tender derailments at first hand, I hastily got into my clothes and hurried out. I found the engineer going forward toward the engine. He told me that when he felt the tender bumping along over the ties he applied the emergency brake, shut off steam and jumped for the tall grass. When he stopped tumbling the train had also stopped and he was near its rear end.

The train and engine were still as shown in the pictures, when we left on another train about noon—the engine standing erect; the tender having crossties and earth filled in all the space up to

A Wreck Apparently Caused by the Derailment of the Tender.

the underframe, and its trucks torn to pieces; the coaches scattered zig-zag; the rails, crossties and ballast swept from the right of way.

No one was hurt. This was the fortunate part of it. After I had looked over the situation for about an hour and a half and returned to the sleeper, a man, pulling his curtain aside, asked: "What are we stopping here for?" The stop was so gradual that many of the passengers were not awakened in the cars that did not leave the rails. It is evident that the track was not torn up until the engine had passed over it.

Why are fast passenger trains wrecked on straight track? Why does the engine stick to the rails and its tender jump the track? These are questions asked every day by anxious railway officers.

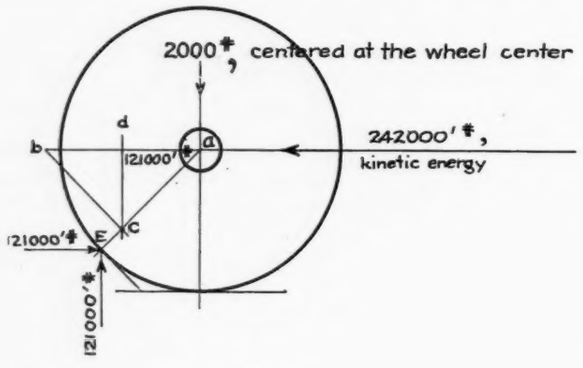


Fig. 1.

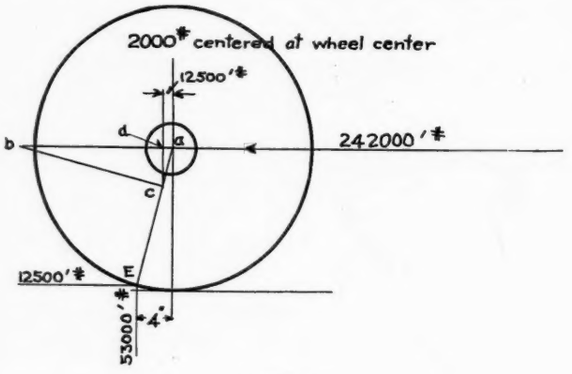


Fig. 2.

I have from time to time written articles touching on different phases of this subject, including those on "Steel vs. Wooden Construction for Cars," in the *Railway Master Mechanic* of January, 1912; "Rail Failures and Car Truck Design," in the *Railway Age Gazette* of February 23, 1912, and "Impact on Rails from Flat Wheels and Other Causes," in the *Railway Age Gazette* of July 12, 1912. In this letter I shall endeavor to cover another phase of the subject so clearly that it will be readily understood.

It is easy enough to know the cause of a wreck when there is a collision, or a switch is left open, but on a straight track with rails apparently in normal condition, the problem is different. Note the phrase, "apparently in normal condition." After the wreck, with the rails and cross ties all torn up and the ballast swept away, investigation proves little or nothing. Everything is so twisted that we cannot tell what happened first. Whether the report is "rails spread," or "defective rail," or "cause unknown," it is all the same—we learn nothing from it. With the track absolutely straight and solid it will not happen, but you cannot keep a track in such a condition.

The trouble is that we are shooting thousands of tons along the track at almost cannon ball speed and attempting to deflect its course without making provision for the resistance necessary to cause such deflection. In rounding curves provision is made for the reaction necessary to change the course of the train, but slight kinks occur in straight track without provision for taking care of the disturbance set up. Lateral kinks in the rails are provided for by loose fits of journals and journal bearings and swing or roller motion devices which permit the wheels to move sideways, back and forth, without deflecting the main mass of the car body from its line of travel. Vertical irregularities are *usually* taken care of by the truck springs which permit the wheels to move up or down relative to the car body without changing its course.

There are times, however, when by reason of violent side rocking of the car body or traversing a warped track surface, the truck springs are compressed solid, and when this happens coincident with a vertical change in the rail surface, the whole of the loaded car has to be deflected from its course. This causes a portion of the stored energy of the moving car to be converted into vertical impact on the rail. Let us analyze this:

The Tender Was Derailed While the Train Was Traveling at a Speed of 55 Miles an Hour.

Take the weight centered at the axis of a wheel on an engine tender, say 2,000 lbs., which includes wheel, axle, journal box and contents. This mass or weight moving along the track at the rate of a mile a minute or 88 feet per second, will have a stored energy of 242,000 ft. lbs. This amount is arrived at as follows:

$$\frac{2{,}000 \times 88 \times 88}{64.4} = 242{,}000$$

In Fig. 1 the 242,000 ft. lbs. measured off at *a-b* is shown graphically. The wheel runs against an obstruction of the rail at *E*, the point of contact being at an angle of 45 deg. from the line of travel through the center of mass at *a*. Drawing a line from *a* to *E* we have the line of resistance, and a line drawn perpendicular to *a-E* and passing through *b* intersects *a-E* at *c*. The line *c-d* represents the vertical reaction at *E* equal to 121,000 ft. lbs., and *a-d* represents the horizontal reaction at *E* equal to 121,000 ft. lbs. They are both equal because the resistance contact point *E* is at an angle of 45 deg. with the line of force *a-b*. Fig. 1 was considered with the obstruction at an angle of 45 deg. with the line of force in order that the force diagram might be easily understood. It is an exaggeration of conditions and would be sure to cause a wreck.

Fig. 2 shows a condition that is likely to be found at crossings or frog points, where the point of the frog comes in contact with the wheel tread about 4 in. in advance of the center of the wheel. With this condition, the 242,000 ft. lbs. is measured at *a-b*. A line is now drawn through *b* perpendicular to *a-E* at *c*. Then d-c, 53,000 ft. lbs., equals the vertical reaction at *E*; and *a-d*, 12,500 ft. lbs., equals the horizontal reaction at *E*. This is the case when the mass in moving along the rail has to lift only the wheel load of 2,000 lbs. over the slight elevation at *E*. In other words, the wheel raises that slight amount so quickly that the great mass of the car body and its load is not moved up at all, the truck springs absorbing the wheel movement.

This cannot occur if, from side swaying of the car body, the truck springs are compressed solid at a time coincident with the wheel coming in contact with the frog point. In that case the greater mass of the car body must move up with the wheel and the mass lifted may be 20,000 lbs. instead of 2,000 lbs. The vertical and horizontal reaction at *E* will be increased in the ratio as 2,000 is to 20,000, or 10 times as great, the vertical reaction being 530,000 ft. lbs., and the horizontal 125,000. In this case the vertical and horizontal reactions at *E* are produced because of the 20,000 lbs. resistance against the upward movement of the wheel, but the force that is pushing the wheel along the track is applied to the truck through the center plate; the wheel striking the frog point is retarded by an unbalanced force of 125,000 ft. lbs., while the one on the other end of the axle has no obstruction, *the two ends of the axle and their wheels must therefore travel on at different velocities.*

What is the result? Derailment, either from *rails spreading*, or the *wheel flange crossing over the rail*, or *something breaks.* It's all the same, the train is ditched and somebody gets busy with a report on the cause of the wreck.

The real cause is *defective equipment—defective in design;* defective because of the gradual increase in load and speed of trains without taking into account the necessity for flexibility between the truck and the heavy rigid car body. The engine boiler has been taxed for heating, lighting, braking, signaling, more tonnage and higher train speed. The engine tender has been built higher, longer and heavier, its center of gravity being in some cases as high as 8 ft. above the rail, its spring capacity almost nil. Too much spring movement causes too much rocking with this high center of gravity.

Wreck after wreck has occurred from this cause, often attended with loss of life. The example of a frog point obstruction shown in Fig. 2 is only used as a basis of calculation. The defective track may be a low or high joint, a loose joint with one rail having a solid support and the other not. There are many conditions of frozen or frost heaved track that produce the result. The unbalanced horizontal and vertical reactions may be more or less than in the example. What I wish to call attention to is the *fact that there is an unbalanced reaction on the wheel, sufficient to slew the truck,* which will either spread the rails or break a wheel flange, or cause the flanges to mount the rail and go over, or something gives way from the excessive stress set up which causes derailment, and that *it can be remedied by a more flexible connection between the truck and the car* which does not permit of the concentration of all the load on half the springs or wheels.

E. W. SUMMERS,
President, Summers Steel Car Company.

MAKE THE STATION AGENCY MORE IMPORTANT.

CHICAGO, September 11, 1912.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

I have noted the article signed "M. A. W." (Little Rock, Ark.), also one signed "Transportation" in your issue of July 5. I agree with "M. A. W." (the Frisco Lines and a few others) in enlarging the responsibility and scope of the local freight agent as a move in the right direction.

Some agents now represent departments at certain meetings, under instructions of the department heads. As an illustration: He receives instructions direct from the traffic department on traffic matters, especially as to classification, rates, etc.; from the accounting department on accounts; and from the legal department in regard to certain legal transactions. Therefore the agent should in fact be the actual representative of the company in every department at his station.

If the agent is not heavy enough for the job we should not make the job fit the caliber of the agent, but select a man who has the capabilities to conform to the requisites to fill the position properly, and pay him accordingly.

One point "M. A. W." did not bring out is the fact that there are a number of meetings called for various purposes which, in a large majority of cases, the superintendents attend, whereas the company's representative who ought to attend is the local freight agent. Only bring the superintendent into the game when matters have to be passed upon which exceed the limitations which are necessarily placed on agents.

I have attended a number of meetings where superintendents have been noted for their "absence," being represented by the local freight agent or subordinate officer; and a peculiar coincidence has been that such superintendents have the best regulated divisions, as compared with some who lose no opportunity of attending meetings. I believe in meetings, to unify rules and practices and in giving our subordinates a chance to attend meetings, where the attendance of the higher officers is not absolutely necessary.

As "M. A. W." states, the division superintendent should go over his division practically every day or be in a position to get a "bird's eye view" of the situation; and if he is to bring about proper results he cannot spend half his time at meetings. I believe in the station agent being the "whole thing," and having charge of the yard master and everything pertaining to the station; except, of course, at large terminals, where it is common to have a superintendent of terminals. Many agents are themselves largely responsible for not taking the initiative in many things. It will be found that a station agent who has ascended the ladder of promotion to higher rank has not been afraid to take the initiative, where emergencies or conditions warranted.

SUPERINTENDENT TRANSPORTATION
(A One-time Station Agent).

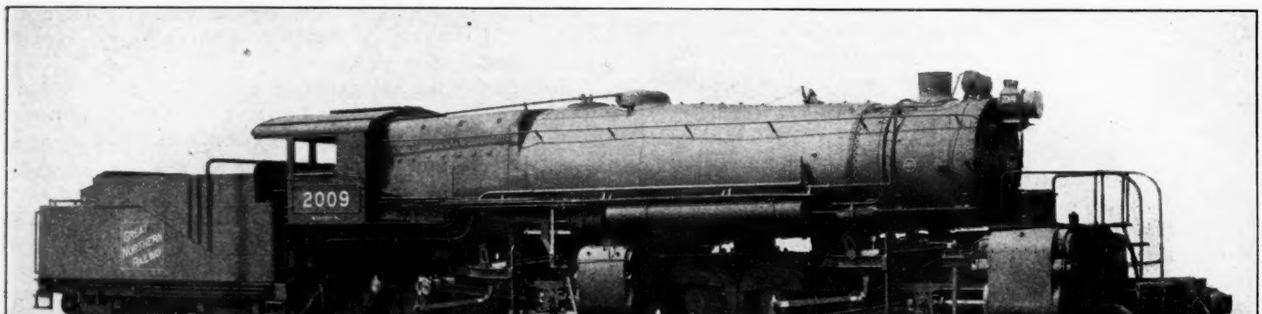
ARGENTINE RAILWAY CONSTRUCTION.—The Ensenada & Costa Sur Railway will build a branch 72 miles long from Elizalde station to Magdalena, continuing the same to Lezama station on the Dolores line. The Magdalena line will be extended about 12 miles from Punta de Rieles toward the south.

MALLET LOCOMOTIVES FOR THE GREAT NORTHERN.

Working Compound They Have a 100,000-Lb. Tractive Effort, Very Nearly as Much as Those of the Virginian Railway.

The Baldwin Locomotive Works has recently completed 25 Mallet locomotives of the 2-8-8-0 type for the Great Northern, which develop a tractive effort of 100,000 lbs. working compound. This represents an increase of 36 per cent. over the locomotives of the 2-6-8-0 type built for this road in 1909, and of 55 per cent. over the original 2-6-6-2 type locomotives built in 1906. Seventeen of the new locomotives use coal as fuel, while the remaining eight are oil burners. All are arranged for the use of highly superheated steam. The height over-all is 16 ft., and the width over the low pressure cylinders is 11 ft. 3 in. The design is based on experience gained in operating Mallets on the Great Northern since 1906.

Boiler.—The boiler is of the Belpaire type with a conical connection which increases the diameter from 90 in. at the first ring to 102 in. at the dome ring. The tubes are 24 ft. long and the firebox has a combustion chamber 58 in. long, which is flattened on its under side, so that the water space beneath it has a maximum depth of 9⅝ in., thus giving a free entry to the throat. The crown of the combustion chamber is stayed by expansion bolts, and flexible bolts are used at the sides and bottom. Similar bolts are also used to a limited extent in the side of the firebox.



One of an Order of Twenty-five Mallets Recently Built for the Great Northern.

The outside firebox shell is braced transversely above the crown by two rows of stays. The upper row is composed of bolts screwed into the sheets, and the lower row of rods which are pinned to T-irons riveted to the shell. The jaws on these stays are forged solid with the rods, no welds being used. The backhead above the crown is stayed with 10 gusset plates, each of which, in turn, is braced by a longitudinal rod whose foot is riveted to the boiler shell ahead of the firebox.

The main dome has a height of 10½ in. and a diameter of 33 in., and is formed of a single piece of flanged steel. Restricted clearance limits necessitate mounting the safety valves and whistle on a steel casting which is depressed into a 26 in. circular opening which is cut into the boiler shell just back of the main dome.

The fire-door opening is single and is 16 in. x 20 in. The grates on the coal-burning locomotives are arranged to rock in four sections and are composed of table bars with drop plates at the rear. The ash-pan has two hoppers with swing bottoms. In lieu of a brick arch of the usual type, a firebrick wall is built across the throat of the combustion chamber. The burner in the oil-burning locomotives is placed in the front of the firebox, and a vertical draft of air may be admitted at the rear through a draft pan fitted with an adjustable damper.

Superheater and Steam Piping.—The superheater is of the Emerson type and is unusually large, the superheating surface, based on the inside area of the pipes measuring 1,368 sq. ft. The saturated and superheated steam headers are separate castings, and are bolted together in pairs. One pair of headers is placed on each side of the smokebox and is connected to 21 superheater elements. The superheater pipes have ball joint connections with the headers and each type is held in place by a plate secured by two studs. It is thus a comparatively simple matter to remove any one group of superheater pipes without disturbing the others. The steam leaves the superheater through right and left-hand pipes which pass out through the sides of the smokebox and extend back to the high pressure cylinders. At a point near the cylinders these pipes are cross connected by an equalizing pipe, so that each cylinder can draw on both headers for its steam supply.

The receiver pipe connecting the high and low pressure cylinders embodies several interesting details of construction. The body of the pipe is in one piece—11 in. inside diameter and 24 ft. 5 in. long. The center line of the ball joint at the back end of the pipe coincides with the center of the articulated frame connection, so that the length of the pipe remains constant when the engine is traversing curves. The ball joint is placed in a cavity formed in the high pressure cylinder saddle; the ball is a steel casting, which is screwed on and welded to the pipe by acetylene, and is seated on two babbitt lined rings of brass. These are held in place by a packed gland. At its forward end the receiver pipe is slip jointed to a cast steel Y connection, one branch of which leads to each low pressure steam chest.

The exhaust pipe is constructed in accordance with the usual practice of the builders. The ball joint is kept tight by a coiled spring at the smokebox end. This is confined within a specially designed casing, so that it cannot suddenly expand and cause damage when the pipe is being dismantled. The slip joint pipe is kept tight by means of snap rings and water grooves. The design is so worked out that when the exhaust steam pipe is removed, the receiver pipe, with the exception of the Y-connection at its forward end, can be slid into place or removed from the front of the locomotive.

Cylinders.—The cylinders are all cast separately from their respective saddles. The high pressure saddle is composed of two pieces, placed one above the other; the upper piece is comparatively small and is riveted to the boiler. The cylinder castings are bolted directly to the lower piece and also to the rear frames. Each frame is extended forward under the saddle in the form of a single rail which is 5 in. wide and 12 in. deep; each cylinder casting is held in place by 49 bolts, of which

13 pass through the frame. The parts are keyed together at the front. This construction provides large bearing areas for the several pieces and insures freedom from their working loose.

The low pressure saddle, so-called, serves as a forward extension of the frames and a support for the low pressure cylinders, but carries no superimposed weight. Each cylinder casting is held in place by 22 1½ in. bolts, and is lipped on top of the saddle so that the bolts are relieved of shear. The keys are driven in vertically and extend the full depth of the cylinder flange.

Valves and Valve Gear.—The steam distribution is controlled by inside admission piston valves which are of the built-up type, 15 in. in diameter. The high pressure valves are of the usual design, while the low pressure valves are arranged for double admission, thus giving ample port openings. The high pressure valves have ¼ in. lead and the low pressure ⅜ in. lead. The valve gears are of the Walschaert type and are controlled by the Ragonnet power mechanism. A special feature on these engines is an arrangement for varying the cut-off in the low pressure cylinders independently of the high pressure. The high pressure reverse shaft has bolted to it a downwardly extending slotted arm. A block is fitted in this slot and to this block the reach rod is pinned. The block can be raised or lowered by a lift shaft, which is rotated by means of a screw and hand wheel placed in the cab. The lift shaft is of cast steel, made in halves, and is mounted directly on the reverse shaft. By raising the block in the slot the low pressure reverse shaft is rotated and the cut-off in the low pressure cylinders is shortened. When the high pressure engine is in full gear the cut-off in the low pressure cylinders can be reduced with this device by as much as 20 per cent. The cut-offs in the two engines can thus be adjusted to give an almost equal division of power when running at various speeds.

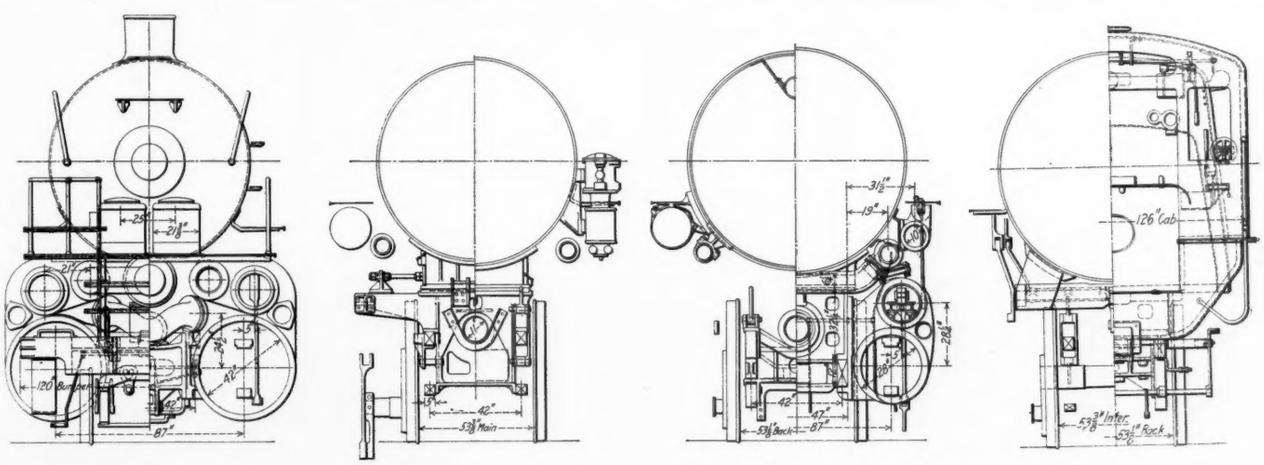
On locomotives equipped with Walschaert gear it is frequently necessary to bend the reverse shaft to clear the boiler. On these engines the reverse shafts are placed comparatively low and are straight. In order to secure room for a sufficiently long lifting link each radius rod is forged with a lug on its under side, and to this lug the link is pinned. The radius rods are finished to a channel section.

Extension piston rods are omitted on both the high and low pressure cylinders. The pistons have dished bodies of cast steel, with cast iron bearing rings. These rings are 6 in. wide, except at the bottom where the width is increased to 8 in. Each piston is fitted with two packing rings which are sprung in.

Frames and Equalization.—The frames are of open hearth cast steel, annealed. Particular attention has been given to the transverse bracing, which in a locomotive of this size is a matter of special importance. Cast steel braces are placed midway between adjacent driving axles on both the front and back frames, and are bolted to the upper and lower frame rails. The brace between the first and second pairs of drivers in each group is extended upward sufficiently to serve as a support for the guide yoke. The two remaining braces on the front frames are each cast in one piece with the lower section of a waist bearer. Both these bearers are under load. The front and rear frames are joined by a single cast steel radius bar. The hinge pin is seated in the walls of the high pressure cylinder saddle and the holes for the pin in the saddle walls and radius bar are bushed.

The front truck is equalized with the leading pair of driving wheels and the second, third and fourth pairs are independently equalized on each side of the locomotive. In the case of the rear group of driving wheels the equalization on each side is continuous. There is very little overhang at the back end of the locomotive and the firebox extends over the two rear pairs of driving wheels. The mudring is supported on expansion plates at the front and back.

Other Details.—Restricted clearance limits made it difficult to place the sand boxes on top of the boiler and a supply of sand is carried in two boxes which are placed over the forward deck plate. Sand is delivered in front of the leading driving wheels only. The bell is placed on the left hand side of the boiler.



Cross-Sections of Mallet Locomotive for the Great Northern.

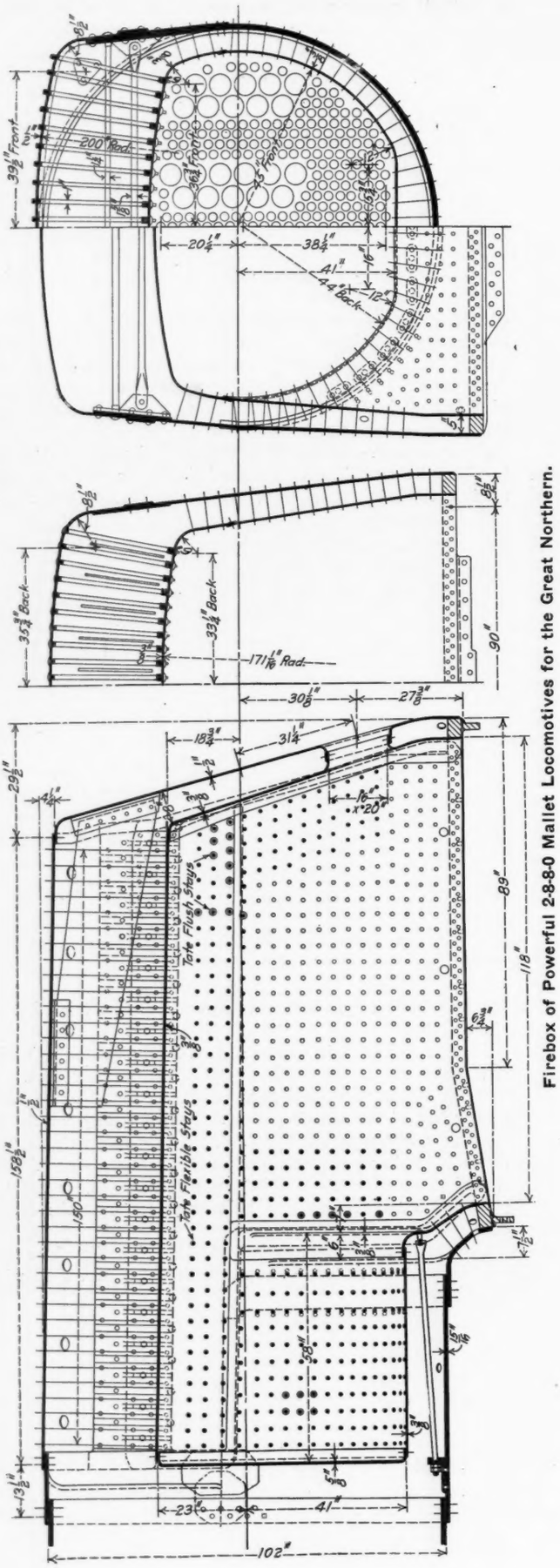
The starting valve is connected to a 2 in. pipe, through which live steam can be admitted direct to the receiver pipe. The cylinders are fitted with vacuum relief valves and also with by-pass valves of the Sheedy pattern. The oil supply for the high pressure cylinders is conveyed direct to the steam chests, while that for the low pressure cylinders is discharged into the back end of the receiver pipe. The low pressure cylinder cocks are pneumatically operated by a cylinder placed over the forward deck plate.

The tender frame is composed of 12 in. channels. The trucks are of the equalized pedestal type, with cast iron chilled wheels weighing 925 lbs. each.

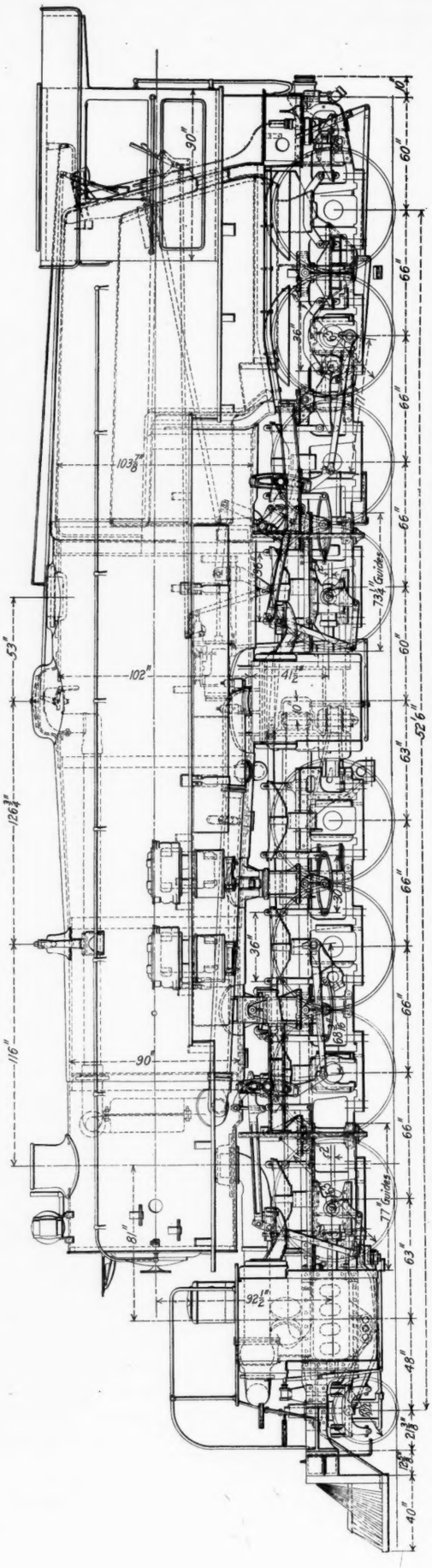
The general dimensions and ratios of these locomotives are as follows:

General Data.

Gage	4 ft. 8½ in.
Service	Freight
Fuel	17 coal, 8 oil
Tractive effort, compound	100,000 lbs.
Weight in working order, estimated	450,000 lbs.
Weight on drivers, estimated	420,000 lbs.
Weight on leading truck, estimated	30,000 lbs.
Weight of engine and tender in working order, estimated	600,000 lbs.
Wheel base, driving	43 ft. 3 in.
Wheel base, rigid	16 ft. 6 in.
Wheel base, total	52 ft. 6 in.
Wheel base, engine and tender	83 ft. 1 in.



Firebox of Powerful 2-8-8-0 Mallet Locomotives for the Great Northern.



Mallet Locomotive with a Tractive Effort of 100,000 Lbs. When Working Compound; Great Northern.

Ratios.

Weight on drivers ÷ tractive effort	4.20
Total weight ÷ tractive effort	4.50
Tractive effort × diam. drivers ÷ equivalent heating surface*	740.00
Equivalent heating surface* ÷ grate area	108.20
Firebox heating surface ÷ equivalent heating surface*, per cent.	3.84
Weight on drivers ÷ equivalent heating surface*	49.40
Total weight ÷ equivalent heating surface	53.00
Volume equivalent simple cylinders, cu. ft.	33.60
Equivalent heating surface* ÷ vol. cylinders	253.00
Grate area ÷ vol. cylinders	2.34

Cylinders.

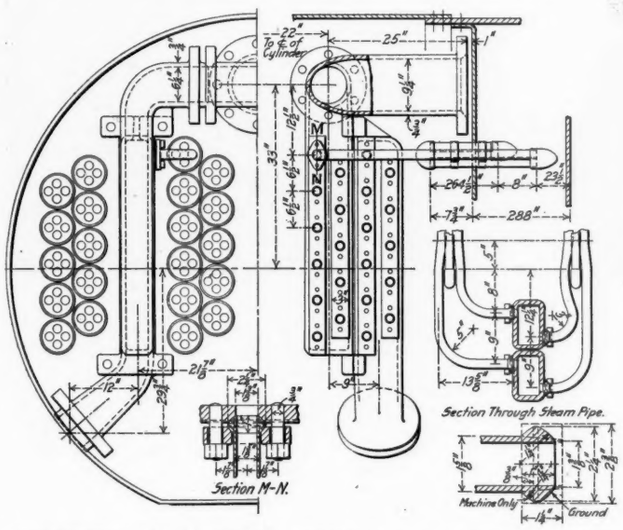
Diameter and stroke	28 in. & 42 in. x 32 in.
Kind of valves	Piston
Diameter of valves	15 in.

Wheels.

Driving, diameter over tires	63 in.
Driving, thickness of tires	3½ in.
Driving journals, main, diameter and length	11 x 12 in.
Driving journals, others, diameter and length	10 x 12 in.
Engine truck wheels, diameter	33½ in.
Engine truck, journals	6 x 12 in.

Boiler.

Style	Belpaire



Arrangement of Emerson Superheater on Great Northern Mallet Locomotives.

Working pressure	210 lbs.
Outside diameter of first ring	90 in.
Firebox, length and width	117¼ in. x 96¼ in.
Firebox plates, thickness	⅜ in. & ⅝ in.
Firebox, water space	F., 6 in.; S. & B., 5 in.
Tubes, number and outside diameter	332—2¼ in.
Flues, number and outside diameter	42—5½ in.
Tubes, material and thickness	Steel, No. 11 B. W. G.
Flues, material and thickness	Steel, No. 8 B. W. G.
Tubes, length	24 ft.
Heating surface, tubes	6,120 sq. ft.
Heating surface, firebox	326 sq. ft.
Heating surface, total	6,446 sq. ft.
Superheater heating surface	1,368 sq. ft.
Grate area	78.4 sq. ft.

Tender.

Frame	12 in. channels
Wheels, diameter	36 in.
Journals, diameter and length	5½ x 10 in.
Water capacity	8,000 gals.
Coal capacity	13 tons

*Equivalent heating surface equals 6,446 + (1.5 × 1,368) = 8,498 sq. ft.

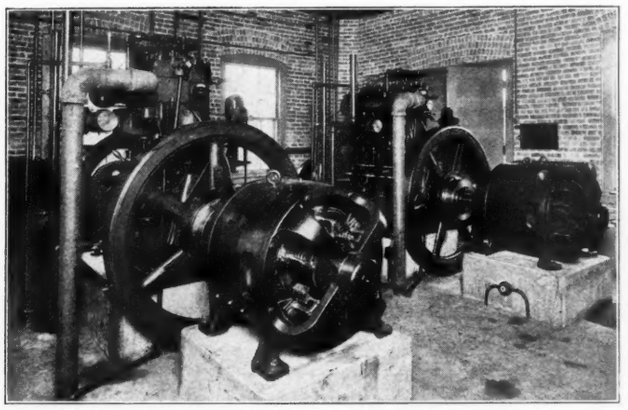
SOUTH AFRICAN RATE REDUCTION.—A number of reductions in railway rates came into force in South Africa in August. Among the articles affected are coal, pipe, tiles, lime, stone and South African cement; the latter sufficient to enable the local production to compete successfully with the imported article as far as 200 miles from the various ports. A number of other reductions have been postponed, pending settlement with the Portuguese authorities; among the articles affected being doors, windows, screens, tram rails and accessories for agricultural and industrial purposes, galvanized iron, imported cement, agricultural and dairying implements and machinery, windows and fencing materials.

ELECTRICAL EQUIPMENT FOR A BASCULE BRIDGE.

BY C. H. NORWOOD,
Contracting Engineer, Chicago.

The electrical installation for the Chicago & Western Indiana bascule bridge over the Calumet river near South Chicago, Ill., is very complete, and illustrates one of the numerous applications of electric power in railway work.

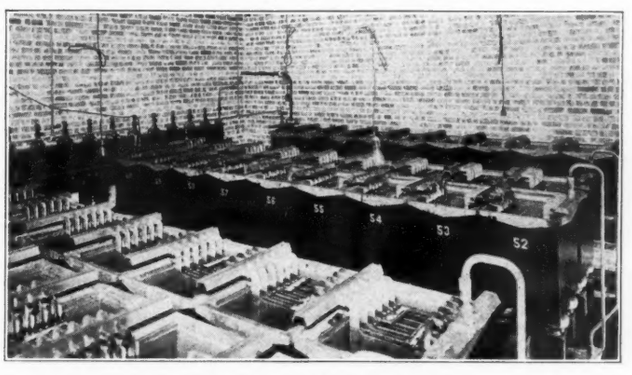
This bridge is of the Strauss design, heel trunnion type, single leaf, double track, 186 ft. long from trunnion to the end of span and weights 1,100,000 pounds exclusive of the counter weight, which consists of slag concrete and weighs approximately 1,500



Battery Charging Sets.

tons. This bridge is one of the longest single leaf spans in the world, its length being exceeded only by a bridge of similar design now being installed by the Baltimore & Ohio over the Calumet river, which will have a movable span of 230 ft.

As there is no available power within several miles of the bridge site, it was necessary for the railway company to install its own plant with sufficient capacity for the economical handling of the bridge at all times and with sufficient allowance for the handling of a second bridge of the same proportions, should four tracks be installed. In order to cut down the size of the plant and have power available at all times, a storage battery plant was installed with a maximum output of 640 ampere hours. To handle



Storage Battery Room.

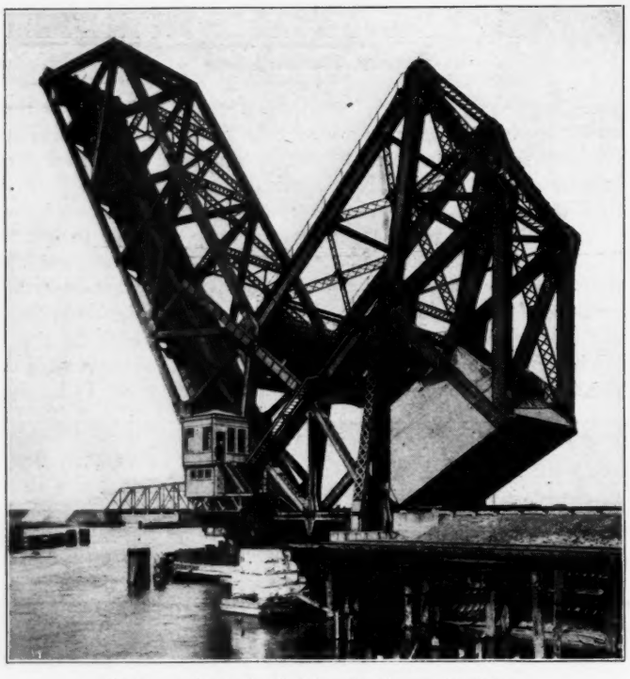
the present bridge, the battery was only partially filled with plates, the remaining plates to be added later as conditions require.

The power house proper is located along the right-of-way, 300 ft. from the bridge and is of fireproof construction. The tracks are elevated at this point and the floor of the house is level with the tracks, thus giving an ample basement under the engine room. The building is divided into two distinct rooms, with separate entrances. In one room is located the battery plant, and in the other, the charging apparatus.

The battery plant consists of two batteries. The smaller has

60 cells of E-7 in glass jars giving a total discharge of 120 ampere hours, and is used for signals, lighting of building, and for operating all auxiliary circuits on automatic devices for the bridge operation and protection. The larger battery has 120 cells of F-17 plates in lead-lined tanks, 11 plates being installed at the present time. Each tank is provided with oil insulators which reduce to a minimum the grounding of the lead tanks, with the accompanying loss of current. The large battery has a tap circuit between cells 60 and 61, which is carried to the switchboard, and which allows either half of this battery to be used while the smaller battery is being charged. The batteries are of the Electric Storage Battery Company's make, the Manchester type of plate being used throughout. The present battery installation is capable of raising and lowering the bridge 20 times without entirely depleting the charge. The charging rate of the larger battery is 55 amperes, and under the present conditions it is charged twice a week for periods of six to eight hours.

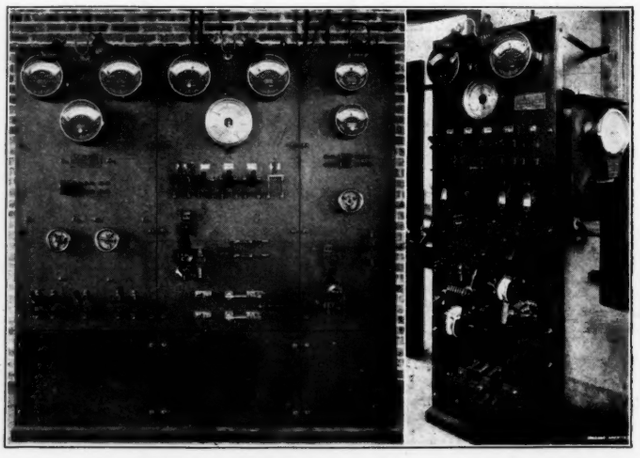
The charging apparatus consists of a duplicate 30 h. p. gasoline engine of the National Meter Company's make, direct connected to a Roth dynamo for the larger battery, and a 5 h. p. outfit for the smaller battery. Cooling water for the engines is obtained from a cistern sunk below the level of the water of the river. The water is filtered through gravel to the cistern and pumped by an electrically driven house pump to a tank on the roof of the power house. Each of the larger engines is equipped with its own circulating pump. A gasoline storage tank of 1,000-gal. capacity is installed a short distance from the house which gives an ample supply of fuel. To facilitate the starting of the engines



Strauss Bascule Bridge in Open Position.

and furnishing of air to the bridge, an air plant has been installed consisting of a direct motor driven compressor of 15 cu. ft. capacity, and storage tanks in the basement of 100 cu. ft. capacity. The air is piped from this point to each engine and to the bridge. The entire building, including battery room and basement, is heated by a hot water heater which maintains a temperature of 60 deg. F. in the coldest weather.

The current from the switchboard in the power house is carried to the operator's house on the bridge in lead-covered cable under ground. The motive power for the lift span consists of two main motors of 65 h. p. each, and an auxiliary motor of 25 h. p., all of the General Electric Company's make. The main motors are operated in series parallel, which on battery current has proved to be both economical and reliable, as the maximum torque is exerted to raise the bridge off its seat with motors in series. The time of lifting varies from 1 to 1⅓ minutes with the large motors, and 20 minutes with the smaller. The starting current under normal conditions is about 385 amperes at 220 volts, dropping off as the resistance is cut out. The current again jumps to 400 amperes when the motors are thrown in parallel, dropping to 300 until the bridge runs into the automatic stop and the brakes are applied. With only one large motor the same conditions existing, the current for raising the bridge off its seat is 500 amperes. Each of the 65 h. p. motors and the 4 h. p. lock motor are equipped with solenoid brakes, and an additional air brake on the first reduction shaft of the lifting machinery, with necessary valves. As this was one of the first installations of air



Power Plant Switchboard. Operator's Switchboard.

for braking purposes, more or less skepticism was expressed. But on actual test it was found very effective and holds the bridge in any position under the most severe conditions.

All motors on this installation are electrically interlocked, thereby preventing the operator from performing an operation out of its proper sequence. The raising motors cannot receive current until the lock motor has withdrawn the lock and come to rest, and in lowering the bridge the lock motor is inoperative until the large motors have come to rest and the bridge is seated. This latter operation is doubly protected by means of a contact switch on the end of the bridge, which closes the circuit only when the bridge is within an inch of seating. The current to the main motors is automatically cut off when the bridge has reached a predetermined point on raising, and it is impossible for the operator to proceed further in this direction. Upon reversal of his controller handle, however, the lifting motors are reversed and the bridge lowered. No automatic stops are installed on the nearly closed position of the bridge, the closing being left entirely to the operator.

The electrical control of the bridge is interlocked with the signal system in such a way that it is impossible to receive any current on the controllers until the proper danger signals have been set, and the master lever of the signal interlocking machine withdrawn. This last operation gives current to the contactors of the bridge equipment, and the very first operation of the bridge devices locks the master lever and prevents clearing the signals. These signals are not released until the bridge has been entirely locked up and the master lever released.

M. K. Trumbull, formerly principal assistant engineer of the Chicago & Western Indiana, was in charge of the construction of this bridge, assisted by N. H. Jacobson, assistant engineer. The contract for foundations and dredging was carried out by the Great Lakes Dredge & Dock Co. The steel for the superstructure was fabricated by the American Bridge Co. after the designs of the Strauss Bascule Bridge Co., and erected by the Kelly Atkinson Construction Co. The signal equipment was furnished by the General Railway Signal Co. under the supervision of F. E. Jacobs, signal engineer of the Chicago & Western Indiana. The complete electrical equipment, including design of power house, was furnished by the writer.

W. J. HARAHAN AND THE SEABOARD AIR LINE.

William J. Harahan, vice-president of the Erie was yesterday elected president of the Seaboard Air Line, succeeding N. S. Meldrum, resigned. As yet no successor to Mr. Harahan on the Erie has been appointed. When the Seaboard Air Line was reorganized and taken out of the hands of receivers, a syndicate of which Blair & Company were prominent members undertook to see that the reorganization was successful. It was a conservative reorganization, and within the last two years the road has shown marked improvement in earning power. Mr. Meldrum, who was elected president after the reorganization, is a member of the firm of Blair & Company, and is a banker rather than a railway man. While willing to give up his time to railway affairs during the financial readjustment of the property, it is probable that he cannot afford to continue to devote as much time as it takes to be the actual executive head of the Seaboard Air Line. There has been, moreover, a general movement to localize the management of the property by the addition of southern directors, and the election of Mr. Harahan as president is a further move in this direction. Also as general manager of the Illinois Central he had an opportunity to study conditions in the South, and is intimately familiar with the traffic problems of that territory.

William J. Harahan.

As vice-president of the Erie, W. J. Harahan was in charge of the engineering department and succeeded the late Mr. Carothers. As a matter of fact, however, Mr. Harahan was, during all of his stay on the Erie, that is, while his title was still assistant to the president, as well as after he was made vice-president, Mr. Underwood's right-hand man. He handled not only engineering but traffic and other matters as well, and was consulted on questions of operation and of policy. He is distinctly a diplomat and often on the Erie handled difficult negotiations with other roads and with outside interests. He is a man with a high reputation for nice honesty and square dealing.

The problems of the Seaboard Air Line from a financial point of view have been well readjusted, as we have already said. The Seaboard, like most southern railways, is not well-to-do. It has not had the amount of money to spend on its property that its principal competitor—the Atlantic Coast Line—has had, and its territory does not include as many good cities as does the Atlantic Coast Line. Probably the principal problem that it now has to face is the situation at Birmingham. The Seaboard Air Line's traffic largely moves north. It has comparatively little traffic moving from the coast west into Birmingham, and for this reason is at a disadvantage in getting its share of eastbound traffic out of Birmingham. It is quite probable that this will be the first problem that Mr. Harahan will have to devote himself to, and from his knowledge of the conditions west of Birmingham, he will be well fitted to undertake the task.

One great advantage that the Seaboard Air Line has is that the greater part of its mileage is main line mileage, although it has rather a long line to Montgomery which should be classed rather as branch line mileage than main line mileage. The main line mileage has been kept in good condition for the territory through which it travels; and notwithstanding the fact that Mr. Harahan comes from the head of the civil engineering department of a road which in recent years has had to do a great deal to put its property in proper shape, his work is more likely to be concerned with the traffic development and the inter-company relations of the Seaboard than with any radical program of immediate improvement.

He was born December 22, 1867, at Nashville, Tenn. He began railway work in 1881 as messenger and clerk in the superintendent's office of the Louisville & Nashville at New Orleans. In 1884 he went as apprentice into the Louisville & Nashville shops, and in 1886 into the engineering department. For two years beginning 1889 he was engineer of maintenance of the Cincinnati division of the Chesapeake & Ohio. In 1890 he was placed in charge of structures on the Baltimore & Ohio Southwestern, and two years later became roadmaster and trainmaster of the Pontiac division of the Illinois Central. In April, 1895, he was made assistant superintendent of the Freeport division, and in October of that same year was made superintendent. In 1896 he became superintendent of the Louisville division, and in May, 1901, was appointed chief engineer of the Illinois Central. A little over a year later he was made assistant general manager; in June, 1904, was made general manager, and in 1905, fourth vice-president and general manager. He came to the Erie as assistant to President Underwood in 1907.

BOLIVIAN RAILWAY CONSTRUCTION.—Grading on the Oruro to Cochamba line has been completed on the first section of the line from Conacona to Aguascalientes; the trains will soon be running to the latter place. At the Ventanilla canyon active work is now being carried on, all of the construction work being of a solid and substantial character.

RAILWAY CONSTRUCTION IN TRIPOLI.—Great activity is being displayed in railway construction in Tripoli. The short line along the coast to Gargaresch is to be pushed forward west as far as Zanzur. The first section from Tripoli to Gargaresch, which has been opened already some months, is rendering good service not only for the conveyance of troops and military stores, but also for the transport of the stone required by the contractors for the harbor works at Tripoli and for the building of the walls round the town. A locomotive shed, workshops for repairs, and sidings for connecting the line with the port have also been completed.

COST ACCOUNTING IN THE ENGINEERING DEPARTMENT.

A Complete and Convenient System Has Been Developed on the Northern Pacific for Construction and Maintenance Work.

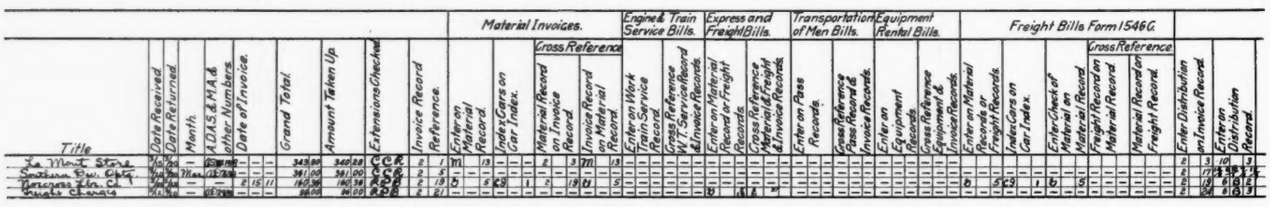
BY C. D. PASSAGE.
Voucher Clerk, Chief Engineer's Office, Northern Pacific, St. Paul, Minn.

A very complete system of accounting for construction, additions and betterment work for use either by a competent clerk located on the work or by an officer in the auditing department having charge only of construction accounts, has been worked out for use on the Northern Pacific, and is being tried on that road. At present the system is being used only by clerks in the field, and from an engineer's standpoint the principal advantages of the system are secured by this method of using the system. By having the clerk who makes the distribution within easy reach of the engineer it is an easy matter to see that such distributions are made on the proper basis, and a very difficult thing if the charges are distributed by an incompetent clerk in the auditing department located perhaps thousands of miles from the engineer. Under the present system, however, invoices and department bills must pass through the chief engineer's office before being sent to the clerk in the field in order to keep a summarized statement of expenses on each construction job in the chief engineer's office. This involves a duplication of work which could be eliminated if the records were kept in the general offices. It would not be as convenient for engineers to use the unit cost figures available from such records if they were kept in the auditing department, but the advantages gained by having a permanent record of the details would still be present under that system.

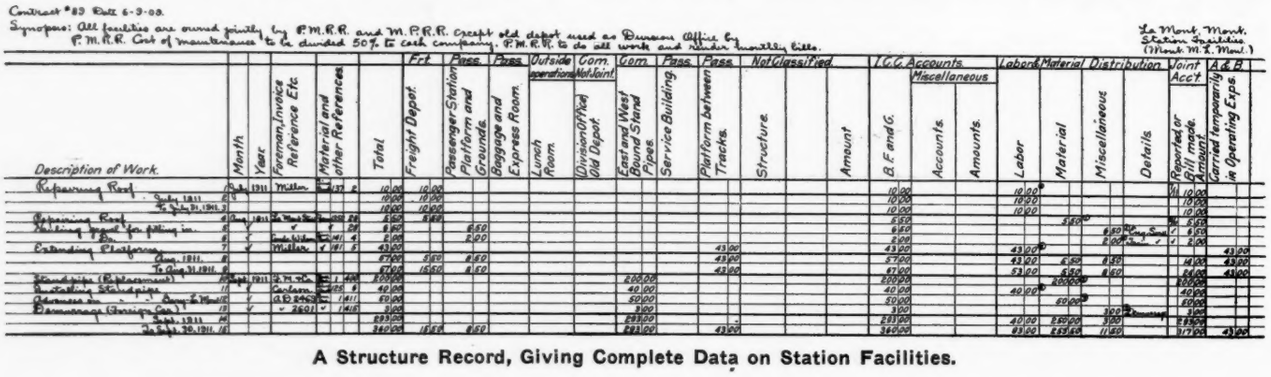
The distribution of charges is so arranged that the requirements of the Interstate Commerce Commission classification are complied with and also the costs of the details of the work are so grouped that unit costs may readily be obtained from the record. All the accounting records necessary on one piece of work can be kept in one book, or on large jobs where it would be advantageous to separate the accounts the material record can be kept by the material clerk and the journal and ledger accounts kept in separate books, thus enabling the clerk to keep his journal up to date and work on the ledger whenever time allows. This system furnishes a permanent record in sufficient detail to enable any item of the work to be referred to and any detail of cost to be secured at any future time. While the details have only been worked out for construction and maintenance work, the principles involved in this system could be applied with equal advantage to necessary accounting in the telegraph and signal departments, and could also be adopted for use by contractors, who must of necessity keep their detailed costs in order to secure a basis for bidding on future work.

FORMS FOR CONSTRUCTION WORK.

The forms used for construction work include four sections: balance and check sheets; invoice record or journal; material and miscellaneous records; and distribution record or ledger. The balance sheets are summaries of the invoice record totals, etc., allowing totals to be given under all the desired classifications and serving as a trial balance sheet of the set. The check sheet is arranged to show at a glance the entries that have been made in the books, and allows any entry to be traced through the entire system. Columns are provided for each of the entries and a line is given to each item. All debits and credits are listed on the check sheet immediately upon their receipt by the clerk, and the balance of the entries are made when time allows. This check sheet can be drawn up so as to enter invoices and departmental bills in alphabetical or departmental order and may be made to serve as an index. After entries are made on the check sheet they are carried to the invoice records, full details being transferred to that sheet in order that a complete record of the original entry may be kept, except where an invoice covering one requisition and one account can be carried complete on the material record, in which case it is only necessary to make a one-line entry on the invoice record which will refer to details on material record. If duplicate departmental bills and invoices could be secured the keeping of these details could be made unnecessary by filing such duplicates in a special file according to sheet and line number where the one-line en-



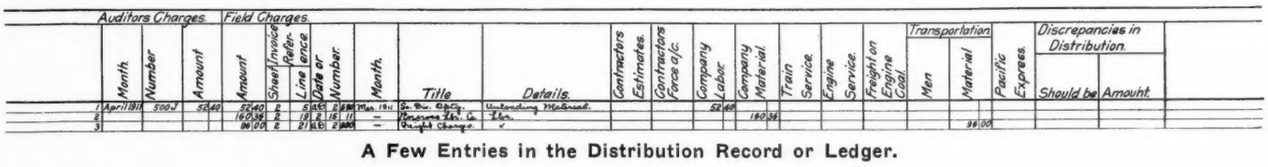
Portion of Check Sheet.



A Structure Record, Giving Complete Data on Station Facilities.

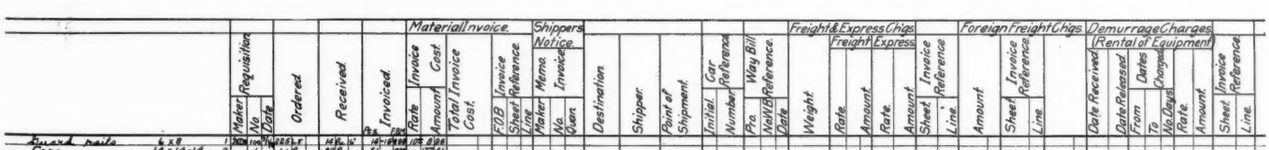
try is made. Special invoice records should be made up for each large shipper from whom it is known that a number of invoices will be received, covering one item of material. This eliminates the keeping of the details of each of these invoices on the general invoice record. It also eliminates the transfer of each invoice to the ledger as the total of the sheet can be carried and makes possible a continual check on each shipper and class of material, such as cement, brick, ties, etc. A combination invoice record and distribution record may be used, but it is not recommended on account of the fact that it does not show the cost distribution of each account, which is important in obtaining a basis for figuring average cost of labor, material, train service, etc. If corrections are made after an invoice is entered the record is corrected accordingly, the cancellation is covered by full explanation and authority, and a ring drawn around the amount to indicate cancellation. The basis of distribution is shown opposite each item in the invoice record wherever necessary to show how total figures are arrived at. After entering an invoice in the invoice record the line and page number of the entry are noted on the upper right-hand corner of the invoice for future reference and to avoid duplicate entry.

The material and miscellaneous records include records of transportation, work train service, equipment and material furnished based on copies of freight bill, conductors' reports, etc. Material is listed from all requisitions under appropriate Road and Equipment Accounts, such as Ties, Rails, Frogs and Switches, and Track Fastenings and Other Material.



A Few Entries in the Distribution Record or Ledger.

A car index sheet is provided to list all cars in which material for the work is being shipped. A temporary record is used for cars not yet located on material records, generally due to a transfer of material from car to car en route. A permanent index shows all cars except those covered by equipment records. The cars are indexed according to the last figure in the car number, making reference easy. The material records kept for each of the Road and Equipment accounts serve as stock records and allow the freight demurrage and express charges to be entered against the material on which the charge is made, this being the only practical method of securing the correct distribution of such transportation charges. The material records show a complete history of each shipment on a single line, including the cost of the material, local and foreign freight, and express charges and demurrage. In some of the accounts it is necessary to classify the material under different headings in order to form a complete stock record—ties, for instance, being divided into crossties, switch ties, bridge ties, and rail being divided according to its weight and class. The disbursement records show first the actual receipts, then all disbursements, including material shipped away from the work. The "used" figures are carried to a distribution sheet showing the various structures included in the work, and the engineer in charge should list the structures on this sheet with their location and the clerk can then fill in the cost figures. A similar distribution of labor charges to various structures is also provided. A number of important miscellaneous records must also be kept in this section, including miscellaneous and contractor's shipments, train service records and pass records. Under miscellaneous shipments are grouped all freight and demurrage charges covering shipments involving several accounts which cannot be carried in full on material records. Freight bills can be filled as a part of this record, according to sheet and line number so that no details need be entered. As soon as it is possible to assign the freight charges to the material record a transfer is made to the proper sheets and the charge on the miscellaneous shipment form is canceled by drawing a circle around the amount. A sheet is prepared for each sub-contractor to show shipments made for him, both to and from the work. This form allows shipments made under free transportation clauses to be carefully checked to see that the contractor is not abusing his transportation privilege, and that return shipments are not being made beyond the original point of shipment. Freight bills on the contractors' shipments receive the field engineer's O. K. before being entered in the form to detect commissary or other shipments that should not be carried free under the contract. The work train service record is made up from conductors' reports after each day's work, and the distribution is made at the same time. A synopsis of the work done by the train is entered on the form as a basis for the distribution of the charge. Bills rendered by the operating department for the wages of engine and train crews are furnished the field engineer with copies of the crews' time slips in addition to the conductors' work reports, the time slips being certified by the field engineer and returned as authority for the monthly bill. This plan reduces erroneous charges to a minimum. The equipment record, covering cars used continually in construction work, is kept by Road and Equipment accounts as far as practical. Cars are indexed according to the last figure, as on the car index form. A daily inventory of the cars in work service is made in the field and entered on this record, and also checked against the conductors' daily report of cars handled. On roads requiring a subdivision of the Rental of Equipment account the I. C. C. Road and Equipment number can be filled in under the date the cas was used and distribution made according to the primary account benefited by the services of each car. A special equipment record is made to show outfit and miscellaneous cars kept in service for a period of several months and used only on one class of work. Charges for these cars can be made once a month on one form until they are released. The pass record is intended for use in addition to the record on the stubs in order to check outsanding passes which the accounting department might fail to charge, for those which are not used and those covering shipments of labor which may not be taken up by the conductor.



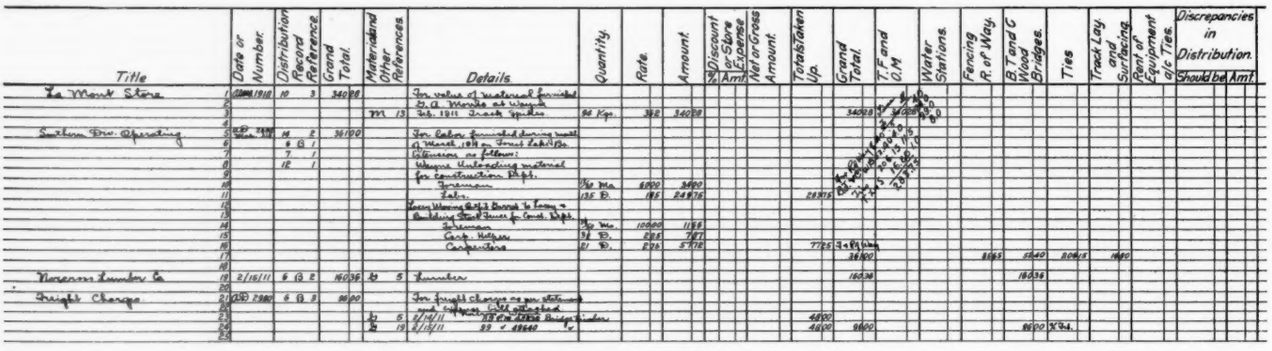
Typical Material Record.

All entries in the invoice record or journal are transferred to the distribution record or ledger according to Road and Equipment accounts, making a double-entry system. The field clerk should be furnished a statement each month, or when conven-

ient, by the accounting department of charges made to the work. This statement should show department bill numbers and names, dates and car numbers on payable invoices. The ledger accounts are outlined to show in adjacent columns these charges taken up by the auditing department and the actual field charges. This serves as a check both on the accounting department and the field records so that mistakes can be detected while the details are still available. Such a record would be of special advantage at the end of the fiscal year, as it would show at a glance the costs yet to be taken up on each construction job. Charges covering right-of-way and other items made against the work and not passing through the field engineer's office, generally known as direct charges, show up in the column of auditor's charges. Full details should be obtained and these charges entered both in the invoice and distribution records. An investigation of such charges will often prevent the charging to a construction account of real estate or other items which should not properly be charged against that account. The estimated cost of work can be entered on the distribution sheet if desired. Such entries make it possible to show the loss or saving made on each item of the work as compared with the estimate. To cover disputed points a sheet can be prepared of questions to be taken up. On this form a complete record of the question and answer can be provided for the entry of all data as received and temporary entries can be shown in pencil pending the receipt of final information, thus eliminating the usual pile of memoranda which must otherwise be kept by a clerk. Statements can be furnished at any time showing the cost of work to date, even including a statement of material not covered by invoices. This would be of great advantage on joint account work in avoiding delays in determining the increased valuation on which to base rental bill, as the records could be inspected by a representative of the foreign line, avoiding the necessity of going through voucher files and correspondence. Space can be provided on the distribution record to figure interest on each payment.

ADDITIONS AND BETTERMENTS ACCOUNTS.

For Addition and Betterment work the forms are quite similar to those used for new construction. The same invoice record can be used, the charges being distributed to the Road and Equipment accounts and divided between the Additions and Betterments accounts. A column is provided for operating expenses, such charges being held in suspense to be covered by a transfer voucher at the end of the month. In handling track work under Additions and Betterments classification a complete inventory of all facilities is made in order to arrive at a



Sample Invoice Record Sheet.

made and all matters to be investigated upon the completion of the work can be entered.

SPECIAL ACCOUNTS.

In many cases it is necessary to provide special sheets for the accounting of charges due to the operation of special plants on construction work, such as gravel pits, concrete slab, or pile yards, etc. The details of such forms depend entirely upon the work to be done and must be worked out for each individual case. In general, however, they cover every possible item of cost chargeable to such special work, including the cost of special equipment purchased and salvage from such equipment at the conclusion of the work, and of costs of operation and maintenance of the plant during the progress of the work. They should be arranged so that unit costs on every phase of the work can be readily obtained. A special form has also been provided to cover foundations and erection of steel buildings, showing separation of cost between cofferdams, concrete work, false work, steel erection, etc.

All the forms are prepared so that column headings show the required information. If an entry is made in the proper place the record will be complete as far as that item is concerned, and the entry is in itself a safeguard against duplication. A blank space in the form indicates that an entry is still to be made. The double-entry feature provides for a money balance and gives a complete check on omissions and duplications. This eliminates to a large extent the trouble usually incurred in changing clerks, and provides a basis for a new clerk to begin work without checking the entire record. Correspondence and reports referring to the work should be filed by sheet and line number of the original entry. The forms can always be kept up to date, as a place is basis for charging operating expenses with the cost of property replaced or abandoned. The new track material is charged to one Additions and Betterments account and transferred monthly to other Additions and Betterments accounts which have been benefited, the temporary distribution being made on the basis of the estimate. This plan of making a monthly distribution simplifies the entry considerably and usually provides a more accurate distribution. When the work is complete a final transfer to the various accounts can be made on the basis of actual inventory. The possibility of changes in the plan makes it impracticable to make a final distribution of material charges according to the estimate. In Additions and Betterments work a profile and plan of the work is prepared in advance to show a basis for charging out the cost of bridges and culverts, grading, etc., so that the distribution will be uniform.

For checking up accounts on Construction, and Additions and Betterments work it is advisable to have a competent traveling auditor who can open a set of books on new work and answer all questions in regard to distribution, etc., thus eliminating a great deal of correspondence with the auditing department. On joint work the checking of such a traveling auditor would, no doubt, save considerable money in making sure that no charges were omitted. Each clerk in charge of construction accounts should have a copy of a sample record on file in the general office for reference. Questions to be taken up either by the clerk or by the office can be referred to this sample record by line and column numbers greatly facilitating such correspondence.

The accounting necessary for maintenance work can be handled on forms prepared for structure records, improvement records, bridge records, section labor and material records. The structure records classify maintenance costs according to the

kind of traffic benefited as well as by the Interstate Commerce Commission classifications. The form provides a balance with pay rolls, material sheets, etc., and furnishes a record for determining the maintenance charges to tenant lines and for dividing charges on joint structures. A memorandum should be made at the head of the column alloted to each structure, showing its original cost, date of construction and date of heavy repairs or other items that may have a bearing on maintenance charges. The accounts for each building should be made continuous, being carried from sheet to sheet in order to provide a permanent record from which comparisons of maintenance costs on the same building and on different buildings of the same type can be secured. A column is provided for Additions and Betterments accounts in which such charges can be entered until an authority for expenditure is received. When such charges are transferred a credit is entered in red.

An improvement record can be drawn up for buildings, bridges or tracks. A detailed estimate should be shown in order to enable a clerk to keep a check on each item so that discrepancies and excessive cost can be taken up promptly. The bridge record is similar to the structure record, with the exception that the distribution according to the kind of traffic is, of course, unnecessary. The section labor record is prepared with a column for each month and a line for each class of work, the record of each gang being kept on separate sheets. An average rate for the entire gang is determined, which includes a proportion of the foreman's time arrived at by dividing the total number of hours the laborers work into the total pay roll, including the foreman's wages. The charges against each item are made on a time basis showing its average rate. It is not necessary to figure out the cost of the different items, as the number of hours can be used as a basis of comparison. Each piece of work is classified under the appropriate Interstate Commerce Commission account and by comparing the sheets for different sections a direct check on the work of the various foremen can be secured.

The section material record is classified under both the Maintenance of Way and Structures distribution and the Additions and Betterments distribution, serving as a check on Additions and Betterments work not so reported by the foreman, also as a check on salvage as a basis for figuring the scrap when making inventory, etc. It is of considerable value to have the details of maintenance work shown in the records in order to provide for a separation of charges on joint maintenance work. For example, a line having joint use of a main line, but not doing any local business along that line, should probably not be charged with the cost of maintenance on sidings, industrial tracks and yards. A material record should be made out for each section and a monthly summary of track material on hand made to cover each roadmaster's district. This summary, made after the foreman's reports are received, would assist the roadmaster in keeping up his stock and would show him where surplus material is being kept which he may want to reach in an emergency. In addition to track material the supervisor of bridge buildings could profitably keep a stock record, regardless of whether or not the material yard is handled by the storekeeper. It is important for the roadmaster and supervisors to be able to locate their stock accurately in order to economize when possible.

MAINTENANCE ACCOUNTS.

For maintenance work on roads using a district accounting system it should be a comparatively simple matter to keep up such a record as material charges, engine and train services and other records are handled through one office and no department bills are required. Supervisors and roadmasters usually check the material used and keep a partial record of charges to improvements as a means of protecting themselves. On many roads the supervisors or roadmasters report the material used to the division superintendent. In such cases this report could be made in triplicate and used as a bill form by the department making material charges and one copy furnished the accountant to use in making up the cost record and file. Labor charges should, of course, be taken direct from the foreman's book. In handling track material a printed form in copying ink could be used to advantage, allowing the section foreman to make entries with an indelible pencil or copying ink, which would be checked by the roadmaster and one of the accountants. These records should be copied in an impression book and returned to the roadmaster to be filed by sections as a permanent record.

There is no uniform method of handling Maintenance of Way accounts. At present on various roads they are kept in the office of either the auditor, storekeeper or chief engineer. Such accounts should be kept by the officer in charge of maintenance or preferably by district accountants, as the detailed cost records kept by supervisors, roadmasters, foremen or other clerks are of very little value. A record kept by the man actually doing the work is incomplete, as it cannot include train service and other items from the operating department. The accounting details should be kept out of the hands of roadmasters and foremen as much as possible so that they can give their time to actual maintenance work. The accounting should be handled, however, by the division accountant in order to keep it close to the work and make them responsible for all records on the division. The distribution should be checked by experienced men, as the foremen are often inclined to make the distribution which would give them the best showing rather than one which would represent the actual condition. The desire to make a showing often leads to the charging of maintenance costs against improvement accounts whenever the estimate will allow, and the responsibility is not always confined to the foremen. This condition would be relieved by the use of a complete maintenance record.

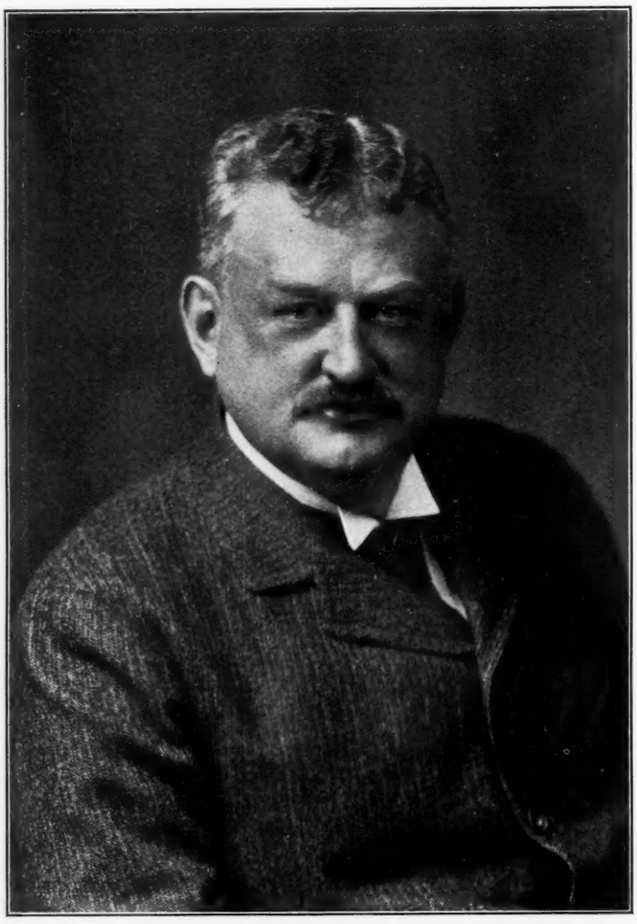
The forms are printed on 24-column ledger paper, 17 in. x 29 in., printed on both sides. Some of the headings should be made by hand, as the forms vary according to the details of the work under way. The ledger and material record forms, however, could be printed complete and the invoice record could be printed with the exception of the distribution columns. Both sides of the forms are used to reduce the expense and size of the record. To reduce the work in the field, purchasing agents and other departments should render bills in duplicate as far as possible. The original should be made with a copying ribbon and the duplicate with a copying carbon. An impression copy can be kept at headquarters and the original and duplicates sent to the division official, and an impression copy taken of the duplicate. The original and duplicate can then be sent to the field engineer, the duplicate to be filed as part of his record, and the original certified and returned in the usual manner.

It is impossible to estimate from the experience gained so far how much additional clerical labor is required to keep up such a record. For the keeping of construction records there would no doubt be some additional forces required for handling the accounting in the field, but the cost of keeping such a record would not be lost to the company, as it would reduce considerably the accounting necessary in the auditor's office, and would enable material economies to be effected in the prosecution of the work by providing engineers with a fuller knowledge of the costs during the time that the work is under way.

ELECTRIFICATION IN NEW SOUTH WALES.—The New South Wales chief commissioner of railways, on being pressed for an improved train service, said that the electrification of the railways was under consideration. The commissioner is of opinion that of all the suburban lines the North Shore will be taken in hand first. It is, however, the intention to electrify the whole of the Northern line as far as Newcastle. Presumably no definite plans will be arranged until experience has been gained with regard to the selection of the tenders, system of traction to be adopted, etc., in connection with the Melbourne scheme.

THOMAS FOWLER AND THE NEW YORK ONTARIO & WESTERN.

The New York, Ontario & Western is a 566-mile road, with more than half of its tonnage furnished by coal. It has been the coal tonnage which has made the road what it is. Without that it is hard to see how the property could have earned enough to pay the interest on its funded debt, let alone any profit to its stockholders. Thomas P. Fowler, who has retired both as president and from the board, was elected president of the New York, Ontario & Western in 1880. At that time the road had no branch into the coal fields. It was in wretched physical shape; it ran through a territory that held out little prospect of either agricultural or manufacturing development, and was at a great disadvantage as a through route, having to compete with a number of lines in far better physical condition whose grades were lower and whose cost of operation was considerably less. There had been some talk of building a branch down into the coal fields, but the idea had been entirely abandoned and was considered quite impossible.



Thomas P. Fowler.

Mr. Fowler reconceived the idea and set about persuading his board of directors that such a branch was the one hope for the development of the property. He met opposition from bankers and from the railways which were already entrenched in the anthracite coal fields. It is probable that he had a hard time persuading even his own directors that such a branch would be profitable enough to warrant antagonizing other interests. It was due to Mr. Fowler personally, that the project was carried out and the New York, Ontario & Western became an anthracite road. The road has always had a hard time to raise money and a hard time to secure traffic. The two local prospects beside the coal that have been developed and are now profitable are the milk business and the summer passenger business. Mr. Fowler always took a keen interest in the development of the summer passenger business and helped materially to establish summer hotels and boarding houses through the territory served by the Ontario & Western.

The fiscal year ended June 30, 1912, was a poor one for the Ontario & Western because of disasters occurring in the collieries the year before and a cessation in mining during the two months that the miners were striking pending an adjustment of wages. The company earned $8,527,944 gross and managed to save $1,797,477 net. There was a surplus of $473,729 after the payment of fixed charges. No dividends were paid. In the previous year there was a surplus of $1,142,936 after the payment of fixed charges, and a dividend of two per cent. was paid on the $58,113,983 outstanding common stock. During last year, of the total revenue $3,843,962 was from coal, $1,061,830 from local freight, $847,960 from through freight, $799,064 from milk and $1,633,911 from passengers. The decrease in local freight earnings was 4.75 per cent. and in through freight earnings, 1.95 per cent., and in coal earnings, 16.38 per cent.; while revenue from milk increased 6.73 per cent. The fact that by far the greater part of the loss in revenue was due to coal conditions over which the company had no control indicates that the poor showing made last year was temporary and that the property may fairly be expected to earn a small return on its capital stock in the future. The prospects, however, for any very large increase in earnings do not appear to be particularly good.

The New York, New Haven & Hartford has held control of the New York, Ontario & Western since 1904. On June 30, 1911, the New Haven owned $29,160,000 stock of the Ontario & Western, or only a little more than half of the total outstanding, and recently has announced its intention of buying the minority stock. This announcement was made after the refusal of the New York Public Service Commission to permit the New Haven to sell its majority holdings to the New York Central & Hudson River. Whether or not the New Haven intends to try to get all of the minority stock and then sell the property to the New York Central & Hudson River, of course, there is no way of knowing.

Some time ago Mr. Fowler announced his desire to retire, and on Wednesday he formally resigned as president of the company and as a director. This means his complete retirement from the management of the property. Charles S. Mellen, president of the New York, New Haven & Hartford, was elected also president of the Ontario & Western, succeeding Mr. Fowler.

Mr. Fowler was born in 1851 in Newburgh, N. Y. He is a graduate of the Columbia Law School and his railway experience has been entirely in the executive department. Operating a small property, Mr. Fowler was able to come in close personal contact with his officers and even, to some extent, with the employees of the road. He was a man who was very easily approachable, never standing on ceremony, and always willing to hear suggestions, whether they came from his officers or from shippers or residents along the road.

FAST SCHEDULES IN GERMANY.—A comparison of the longest runs without stops on the railways of the principal German states, shows one of 178 miles in 194 minutes in Prussia, between Berlin and Hamburg; one of 172 miles in 205 minutes between Munich and Wurzburg, in Bavaria; one of 81 miles in 117 minutes in Mecklenburg; one of 80 miles in 100 minutes, mostly in Alsace, between Ludwigshafen and Strasburg. The highest speed on these runs is 55 miles an hour between Berlin and Hamburg; 51 miles in Baden between Freiburg and Oos, and 48 miles between Ludwigshafen and Strasburg, and so on down. There are three runs in England longer than the longest in Germany, the longest, 226 miles, between London and Plymouth.

FRISCO ORGANIZES STANDARDIZATION AND EFFICIENCY COMMITTEE.

A general standardization and efficiency association was organized on the St. Louis & San Francisco at a meeting at Springfield on Tuesday, September 24, of the chief clerks, assistant chief clerks, heads of departments, accountants and timekeepers. The object of the association, which has been under consideration by the officers of the road for some time, is to increase the efficiency of the general and division offices, to standardize office methods and forms, eliminate unnecessary work and duplicate information and to bring about more harmonious relations between general and division offices.

The membership of the organization will consist of the chief clerks and heads of departments in the general offices, the chief clerk, either the mechanical or transportation accountant, and the timekeeper in the division offices, and the chief clerks to the superintendents of terminals.

The plan of organization includes a president, vice-president and secretary, an executive committee composed of a chairman and six or eight members to be equally divided between the general and division offices, and the following committees: Reports committee, forms committee, office organization committee, office methods committee, claims and O. S. & D. committee, correspondence and files committee, accounts and accounting committee, schedules and timekeeping committee, state and interstate commission reports committee, and such other committees as may be found desirable in order that all matters in which the general and division officers are interested may be properly taken care of in the work of the association. A brief outline of the work to be handled by the various committees is as follows:

The duty of the executive committee will be to assemble reports from the various subcommittees and transmit to the various offices interested the matters which are to come up for discussion at the general meeting, which will be held either at Springfield or some other point every ninety days. They will arrange to have the reports mimeographed and distributed and will keep an account of the action taken on each individual item that shall come before the association for discussion, a copy of which detailed report will be sent to each member of the association as soon as possible after the close of the meeting. General instructions will be issued by the departments interested.

The reports committee will have jurisdiction over the methods of securing data and the manner of rendering the various reports, to see that each report is based on figures secured from the proper source, compiled in a uniform manner by all offices, and the questioning of any report which may be considered unnecessary, inaccurate or inconsistent. This committee will also consider the advisability of providing printed forms for the rendering of certain regular reports, which are to be submitted to the forms committee for their recommendation and further handling.

The forms committee will handle all recommendations with reference to forms and changes in printed forms; also supervise the caring for and the ordering of stationery supplies.

The office organization committee will endeavor to standardize, in so far as possible, the work required of different positions in the division offices and make recommendations covering any feature which will have a tendency to raise any office to the desired state of efficiency.

The claims and O. S. & D. committee will inaugurate a systematic method of investigating all claims and the prompt handling of O. S. & D. reports, which is a very large proportion of the correspondence in division offices.

The correspondence and files committee will systematize, so far as possible, the distribution and handling of correspondence in division offices, calling attention to any apparent duplication, or unnecessarily large volume of circular letters of instructions and calling for acknowledgments of various letters which may not serve any good purpose. The various file systems will be given particular attention by the committee to bring about a uniform method of indexing and filing correspondence and various office records.

The accounts and accounting committee will have jurisdiction over the method of preparing all labor and material distribution, payrolls, reports and statements required to be rendered to the accounting department, and such other matters directly pertaining to the handling of accounts.

The schedules and timekeeping committee will invite discussions and questions petaining to the proper interpretation of all schedules and the proper method of keeping time.

The office method committee will look into improved office methods and make recommendations as to changes deemed necessary in order to obtain greater efficiency.

The state and interstate commission committee will issue a uniform and correct statement of the requirements prescribed by the Interstate Commerce Commission and the various state commissions.

The work to be assigned to these committees, it is expected, may be materially enlarged upon in addition to that outlined. All members of committees will serve for one year in order to enable them to carry to a successful conclusion subjects which it is impossible to dispose of in less time. It is proposed to hold the regular meetings of the association during the latter part of the month so as not to interfere with payrolls, monthly reports, etc.

The plan for the association originated with General Manager W. T. Tyler, who, over a year ago, brought about the organization of an office standardization committee of three members who visited the various offices and suggested changes in methods and forms for the purpose of obtaining uniformity and eliminating duplication. The work of this committee resulted in many conferences among officers, heads of departments and chief clerks, as to ways of increasing the efficiency and harmony of the various offices, during which the plan of organization of the general association was thoroughly discussed. It was found that while the former committee was able to accomplish some good results, it did not have sufficient authority to put into effect changes which it thought necessary and it is believed that the new association, with the hearty co-operation of the officers, will be able to create an enthusiasm and interest in securing greater efficiency among those who are in the best position to make the recommendations effective. The chief clerks will be able to adopt the recommendations in their own offices at once, except in case where it is necessary to consult the officer in charge, and it is proposed to hold meetings of the entire force in the office following the general meetings for the purpose of discussing and making effective the recommendations adopted at the general meetings.

WAGE INCREASES ON ENGLISH RAILWAYS.—The railway conciliation scheme of the English government, which stopped the strike, has now worked out in the concrete form of substantial increases of pay to the men on three systems. On the chief of them, the Lancashire & Yorkshire, nearly half the signalmen get 36 cents a week advance, and the other half 61 cents a week advance, amounting altogether to about $50,000 a year. The enginemen and other locomotive men get increases which will total $50,000 or $60,000 a year. Platform porters are to get $4.87 a week, which is 49 cents a week more than they have been getting since the strike, and 73 cents a week more than they got before the strike. In the same way passenger guards, who before the strike seldom got more than $6.81 a week, are now given a maximum of $7.78, to be reached automatically after seven years' service.

WEIGHT OF RAILS IN TRACK.

The Special Committee on relations of railway operation to legislation has collected data showing the weight of rail in main and side tracks on January 1, 1912. This report includes 213 railways operating 216,951 miles of road with 244,496 miles of main track; 83,662 miles of sidings. The accompanying tables give the percentages of the various weights of rails on the main track, together with the actual mileage. It is interesting to note, that although the open hearth rail has only come into general use within the past few years, already over 11 per cent. of the rail is of this material. The larger majority of it is, as would be expected, of 80 lb. section and over. It is also interesting to note that practically 2,700 miles, or 1.10 per cent. of the rail reporting is of special alloy, this also being largely of 80 lb. weight or over.

RAIL IN MAIN TRACK.

	Bessemer.	Open Hearth.	Special Alloy.	Total.
Percents	87.47	11.43	1.10	100.00 Percents.
100 pounds and upward				5.845
90 pounds and less than 100				8.324
80 pounds and less than 90				32.941
75 pounds and less than 80				12.809
70 pounds and less than 75				8.564
60 pounds and less than 70				18.158
Less than 60 pounds / Mixed / Unknown				13.314
Iron				.045
Total				100.00

Weight of Steel Rail in Track, January 1, 1912. Pounds.	MILES OF MAIN TRACK. Bessemer.	Open Hearth.	Special Alloy.	Total.
141	9.99	19.521	.....	29.511
137	2.40	.....	.....	2.40
135	.....	3.93	.....	3.93
101	3.67	70.653	67.30	141.623
100	10,185.935	3,232.09	693.987	14,112.012
95	314.16	.....	.....	314.16
90	11,091.129	7,793.458	1,152.724	20,037.311
86	5.54	2.22	.....	7.76
85	38,825.64	6,334.107	77.81	45,237.557
80	28,884.186	5,860.041	550.863	35,295.09
79	1,246.62	.....	.....	1,246.62
76	1,936.279	43.60	.....	1,979.879
75	25,904.139	2,058.76	129.375	28,092.274
74	491.793	.....	.....	491.793
73	89.27	.....	.....	89.27
72	5,454.57	.....	.....	5,454.57
70	13,756.206	1,147.36	.40	14,903.966
68½	1,416.14	.....	.....	1,416.14
67	2,442.83	4.41	.....	2,447.24
66	3,907.70	19.89	.....	3,927.59
65	9,529.19	499.429	.....	10,028.619
64	74.09	.....	.....	74.09
63-63½	1,572.196	.....	.....	1,572.196
62-62½	968.301	.....	.....	968.301
61-61½	1,799.746	.....	1.40	1,801.146
60-60½	21,860.657	300.26	.....	22,160.917
58	988.988	.....	.....	988.988
57	913.73	.....	.....	913.73
56 and less	25,994.821	561.57	24.89	26,581.281
Mixed	212.14	.....	.....	212.14
Unknown	3,853.241	.....	.....	3,853.241
Iron	110.685	.....	.....	110.685
Total	213,845.982	27,951.299	2,698.749	244,496.03

SANTA FE RAILWAY, ARGENTINA.—This company has completed plans for the addition of 450 miles to the 1,100 now in operation. Material for the first 65 miles has already been contracted for. The remainder of the extension will not be constructed immediately.

FUEL ECONOMY ON THE ALTON.

The Chicago & Alton is about to start a fuel economy campaign and the work has been placed in charge of George H. Baker, president of the Railway Educational Association of New York, who will devote about 75 per cent. of his time to it without any compensation. Mr. Baker expects that the results of this work will greatly benefit and strengthen the aims of his association. He is to be provided with an instruction car and will travel over the road giving lectures of a practical nature to the engine house foremen, engineers, firemen and hostlers at each engine terminal point. He will be assisted by two firemen taken from the road who will travel on the engines and give the firemen practical instruction.

Bulletins have been issued by J. T. McGrath, superintendent of rolling stock, under the head of Locomotive Fuel Economy, which have been posted at engine houses and coaling points calling the attention of the men handling fuel as to how they can save the company money by exerting care in the performance of their work. Mr. Baker, in addition to this, will issue instruction books concerning the use of fuel and the handling of the engines to give the most economical and practical service.

Mr. Baker was once a locomotive fireman and engineer and since his active service has devoted considerable time to the study of fuel economy. Through this work on the Chicago & Alton he expects to save the company more than $100,000 a year. A statement concerning fuel economy has been issued by the company as follows:

"The cost of fuel is the chief operating expense of this company and exceeds $1,100,000 annually. This expense can be reduced by efforts of employees to economize and avoid waste. The management looks to the locomotive engineers and firemen for the greatest saving of fuel, and other employees by their co-operation also can assist."

LEGISLATION RELATING TO OPERATION.

The Special Committee on Relations of Railway Operation to Legislation has compiled a table which is reproduced herewith showing the number and character of the bills introduced and laws enacted relating to railway operation in the state legislatures during the sessions of 1912. The table shows that in 19 states the legislatures were in session during the year, but in six states the legislatures held only special sessions, in which no laws relating to railway operation were enacted. In the 13 states in which the legislatures were in regular session a total of 292 bills were introduced, of which 48 were enacted into law.

As in previous years, laws relating to employees and to passenger trains were the most numerous. The bills relating to employees, of which 101 were introduced, include 17 that were enacted into law, of which eight relate to service letters and time of payment, and five to terms of employment. Eight of these laws were passed in the new state of Arizona. Eleven laws relating to the operation or equipment of passenger trains were passed in the states of Arizona, Georgia, Kentucky, Maryland, Massachusetts, Mississippi and South Carolina. Five states, Arizona, Kentucky, Mississippi, New York and South Carolina, passed a total of six laws relating to headlights and appliances; headlight laws being passed in three states. The other laws enacted relate to such subjects as Sunday trains, speed of freight, track scales and weighing, inspection and shop equipment, while laws relating to trespassers were enacted in Georgia, Maryland and New York, and relating to reports of accidents in Massachusetts and New Jersey.

The new state of Arizona leads in the number of laws, 12 of

BULLETIN No. 37

BILLS INTRODUCED AND LAWS ENACTED IN STATE LEGISLATURES, RELATING TO OPERATION

(SESSIONS OF 1912)

C. L. ("C" 1-37. "D" 1-21.

*Special Session.

SUBJECTS	Ariz.		Ga.		*Idaho		*Ill.		Ky.		La.		*Me.		Md.		Mass.		*Mich.		Miss.		*Nev.		N. J.		N. M.		N. Y.		R. I.		S.Car.		Va.		*Wis.		TOTAL	
	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted	Introduced	Enacted
1. EMPLOYES																																						
a. Full crews and experience	3	3	2						1		2				1		4				2				4		2		5		2		1		2				31	3
b. Hours of service	1																										1	1	3						1			6	1
c. Service Letters and time of payment	7	3	2								8	3			1		1				4						4	1	1		1		2		1	1			32	8
d. Terms of employment	6	2	3						1		2						5	1							1		5	2	1		6		1		1				32	5
e. Uniforms																																						
2. ARBITRATION																																						
a. Compulsory											1						1												1		2								5	
b. Voluntary																																						
3. TRAIN RULES																																						
a. Uniform																																						
4. EQUIPMENT																																						
a. Caboose																													2									2	
b. Boiler Inspection																													2									2	
c. Headlights	1	1							2		2										2	1					1						1	1				9	3
d. Safety Appliances																																						
e. Repair of																																						
f. Appliances required	1	1							2	1							9												3	1	1							16	3
g. Examination of			2																																			2	
h. Specifications																																						
5. PASSENGER TRAINS																																						
a. To be run	1	1									1										2						1						2					7	1
b. Stops									2	1																							3		1			6	1
c. Equipment of			2	1					1	1	4				3	1	5	2			2	1			7		3		4		1		3	2	1			36	8
d. Baggage									1																3								1	1	1			6	1
e. Drinking on																											2								1			3	
f. Ejection from																																						
6. FREIGHT TRAINS																																						
a Speed of Live Stock									2																													2	
b. Sunday Trains			2	2							2																						2	1				6	3
c. Speed of Dead Freight																																	1	1				1	1
d. Handling of Explosives																													3									3	
7. CARS																																						
a. To be Furnished									2																		1								1			4	
b. Demurrage															1												1		3									5	
8. BLOCK AND OTHER SIGNALS																																			1			1	
a. Block and Interlock																																						
b. Switch Lights	1																																					1	
9. CLEARANCES																																						
a. Required			1																																			1	
10. CROSSINGS																																						
a. Required																	1																		1			2	
b. Protection			2								1														2				2						1			8	
c. Separation of Grades																	1								2													3	
11. MAINTENANCE OF WAY—GENERAL																																						
a. Track Scales and Weighing																																	2	1				2	1
b. Burning Weeds																											2											2	
c. Fencing	1																										1											2	
d. Drainage											1	1																										1	1
e. Inspection			1								2	2																										3	2
f. Double Track																																						
12. STATIONS																																						
a. Required	2																				2								2				2					8	
b. Equipment of																					2						1						1		4			8	
c. Stock Yards									1																													1	
d. Shop Equipment			1						2		2										1	1																6	1
e. Track Connections																																			3			3	
13. HOSPITALS AND RELIEF DEPT'S																																						
a.																																						
14. CLAIMS																																						
a. When to be paid	2										2										2												3		1			10	
15. TRESPASSERS																																						
a.	1	1							1						4	1	1												1	1								8	3
16. REPORTS																																						
a. Accidents																	2	1							1	1									2			5	2
b. Delays																					1																	1	
TOTAL	27	12	18	3	*		*		18	3	30	6	*		10	2	30	4	*		20	3	*		20	1	25	4	33	2	13		25	7	23	1	*		292	85

the 27 bills which were introduced having been enacted into law. The state of South Carolina comes next with seven out of 25. More bills relating to railway operation were introduced in New York than any other state, but only two out of 33 were passed. In Louisiana and in Massachusetts 30 bills were introduced, of which in Louisiana only six became law, and in Massachusetts four.

EXHAUST VENTILATOR.

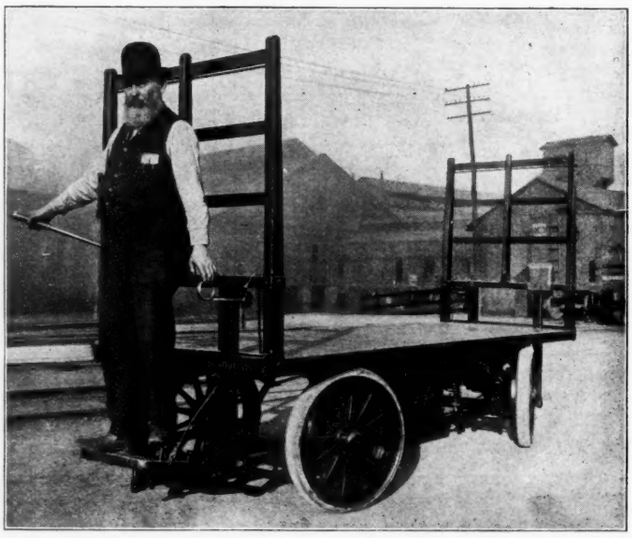
A new type of ventilator, designed to exhaust air from buildings, has been placed on the market by Paul Dickinson, Inc., Chicago, and is called the Dickinson Aeolus ventilator. The suction in the main flue or pipe is caused by the deflection of the air currents in the outside flues. The air currents passing upwardly in these suction flues create a positive draft in the flue or pipe in passing over the top edge of the pipe. The flues are six in number, and as can be seen from the illustration, are rectangular in form. By maikng the flues rectangular, and by leaving the spaces in between them open, a greater suction is created by the moving air currents. These principles and facts were developed from tests.

Dickinson Aeolus Ventilator for Buildings.

In order to get the maximum amount of efficiency from employees, it is necessary to furnish them with the best air obtainable, and to do this at a minimum cost and up-keep a good ventilator is necessary. These ventilators in addition to being made of any sheet metal, are also made in cast iron, where conditions require that material of extreme durability be used.

THE BUCKWALTER ELECTRIC BAGGAGE TRUCK.

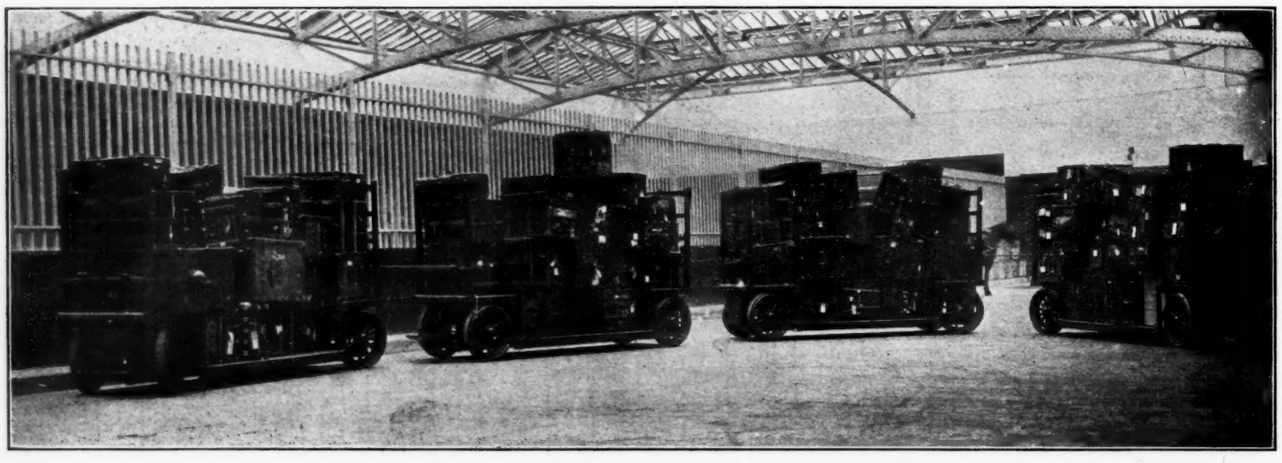
The rapid increase in the amount of mail and baggage handled at the larger passenger terminals has required the services of a large and continuously increasing corps of men to handle it expeditiously and economically. The use of the electric truck for this work has now developed to such an extent as to warrant its serious consideration and investigation. The most important applications of this method of transportation have been made at the Pennsylvania and Grand Central terminals in New York, where 47 and 20 trucks, respectively, are now in use. These trucks are of the Buckwalter type, made by the Elwell-Parker Electric Company, Cleveland. Other installations of this same type of truck are at the Broad Street Station, Philadelphia, where 10 trucks are in service, and at the Union Station, Washington, where 12 trucks are used, while other trucks of this same type are being used experimentally at the Pittsburgh Union Station, Chicago Union Station, union depot at Salt Lake, and Kansas City Union Depot, also at several points by the American Express Company.



The Buckwalter High Platform Electric Baggage Truck.

The feasibility of the electric truck for handling baggage was first realized about eight years ago, when two commercial trucks were placed in service at the Jersey City station of the Pennsylvania. Based on experiments at this and other points, modifications were made until about two years ago when this truck was developed and put into actual service.

The Buckwalter truck has a rated capacity of 4,000 lbs., and



Buckwalter Electric Baggage Trucks in Service.

is geared for three speeds, the maximum being eight miles per hour empty and six miles per hour loaded. It has sufficient power to carry the maximum loads up a 14 per cent. grade, this being accomplished daily by twenty-eight of these trucks at Boston. The truck is operated by a man riding on a small operator's platform on either end, thereby avoiding the necessity of turning on narrow platforms and in congested quarters. No special labor is required, the trucks being turned over to the regular porters to operate, both at the Grand Central and Pennsylvania terminals. The Buckwalter baggage trucks are built in two types; one has a high platform and is designed for use where the tracks are on a level with the station platform, and the second has a drop frame with the top of the truck platform about nine inches above the depot platform, and is intended for use where the tracks are depressed so that the car floor is about on the level of the platform. Power is secured from storage batteries, which can either be charged by inserting a plug from any direct current line with the necessary resistance, or by replacing the discharged batteries, with a delay of but a few minutes. This latter practice is followed in the Pennsylvania terminals where the cars are in service the entire 24 hours.

The economies resulting from the substitution of mechanical power for manual labor are best shown by the accompanying comparison of the cost of operating electric and hand trucks at the Grand Central Station, the following figures being based on careful records of cost kept at this station.

Observations showed that in handling mail, an electric truck would make five trips of two tons each, or a total of 10 tons in the time required for a hand truck to make four trips carrying one ton each trip, so that two and one-half hand trucks will be required to equal the performance of one electric truck. The fixed charges have been estimated on this basis. Since one man is required to operate an electric truck and two for a hand truck, the comparative labor cost is as one to five in favor of the electric truck. In handling baggage it was observed that one electric truck would make four trips of one and one-half tons each in the time required for a hand truck to make three trips of one ton each, so that two hand trucks would be necessary to equal the performance of the electric truck. In the accompanying tabulation the fixed charges for handling baggage have been fixed on this ratio. Since the labor requirements are the same as in handling mail, the ratio of labor required is as one to four in favor of the electric truck. Also in handling baggage with hand trucks it is necessary to use extra men with small trucks to take late baggage to the train. Owing to its higher speed and easier operation, the electric truck can await all baggage for a train and eliminate this extra labor. In the comparative statement, this emergency labor is shown separately. It was considered that the space required for the storage of extra hand trucks was approximately offset by the charging space required by the electric trucks.

COMPARISON OF ANNUAL COST OF ELECTRICALLY AND HAND OPERATED BAGGAGE TRUCKS HANDLING MAIL AND BAGGAGE.

	Mail		Baggage	
	Electric.	Hand.	Electric.	Hand.
Fixed Charges—				
Interest, insurance and taxes, 8 per cent.	$150.00	$10.00	$150.00	$8.00
Depreciation—				
Trucks, 10 per cent.	148.00	12.50	148.00	10.00
Batteries, 30 per cent.	45.00	.....	45.00	.....
Tires, 30 per cent.	36.00	.....	36.00	.....
Switchboard apparatus, 5 per cent.	6.25	.....	6.25	.....
	$385.25	$22.50	$385.25	$18.00
Inspection, Repairs and Maintenance—				
Labor, 1/20th time of one man at $75 per month	$45.00	.....	$45.00	.....
Material	60.00	$25.00	60.00	$20.00
	$105.00	$25.00	$105.00	$20.00
Operation—				
Labor, $2 a day	$730.00	$3,690.00	$730.00	$2,920.00
Power, 5 k. w. h. for 365 days at 1.5 cts.	27.50	.....	27.50	.....
	$757.50	$3,690.00	$757.50	$2,920.00
Emergency labor at $2 a day	.....	.....	.....	730.00
				$3,650.00
Total	$1,247.75	$3,737.50	$1,247.75	$2,958.00
Including emergency labor	.....	.....	.....	$3,688.00
Saving of electric over hand	66 per cent.		58 per cent.	
Including emergency labor	.....		66 per cent.	

	Electric.	Hand.
First cost—Truck	$1,480.00	
Batteries	150.00	
Tires	120.00	$50.00
	$1,750.00	
1/20th cost of switchboard apparatus	125.00	
	$1,875.00	
Men necessary to operate one truck	1	2

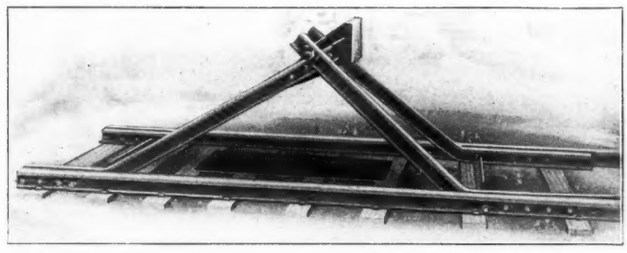
RECAPITULATION OF ANNUAL COSTS.

	Electric. Mail or Baggage.	Hand. Mail or Baggage.	
Fixed charges	$385.20	$22.50	$18.00
Inspection, repairs and maintenance	105.00	25.00	20.00
Operation	757.50	3,650.00	2,920.00
	$1,247.75	$3,697.50	$2,958.00
Emergency labor			730.00
			$3,688.00

It will be noted from the above that in handling mail an electric truck can save its first cost in a little over nine months or thirteen months, the time depending upon the inclusion or exclusion of the cost of emergency labor when using hand trucks.

BUDA BUMPING POST.

An all-steel bumping post, which can be readily moved from one location to another if desired, is shown in the accompanying illustration. These posts are complete within themselves and require no concrete or earthwork foundation or reinforcement. They are inexpensive, comparatively light and can be easily used on service tracks by bolting direct to the running rails. As may



Buda Bumping Post.

be seen, the force of the blow is taken by a heavy cast steel head and is largely transferred to two rails set at a suitable angle to best resist distortion. There are 1⅛ in. tie rods extending across between the rails, both front and rear, which resist any tendency to spread the track. The tests in service have indicated this design of bumping post to be efficient. The post has been designed and is being built by The Buda Company, Chicago.

PASSES IN AUSTRALIA.—An attempt being made to secure free life passes over the railways of the different states in Australia for ex-ministers of the commonwealth. Public opinion is strongly against the principle. The case of a Victorian minister who held office for 26 hours, but was granted a life pass, is cited as one of the objections.

General News.

In the federal court at Salt Lake City the Denver & Rio Grande has been fined $2,600 for violations of the hours of service law.

Three indictments charging violation of the full crew law of Indiana, have been returned against the Grand Trunk Western by the grand jury at South Bend.

A press despatch from Paris, September 22, reports a collision of excursion trains on that day near Cabourg, in which eight persons were killed and 20 injured.

A press despatch from Brussels, September 19, reports a collision of passenger trains at Marheban, Belgium, on that day, in which 62 persons were injured, seven of them fatally.

The United States Civil Service Commission announces that the examination for engineer draftsmen which had been appointed for September 11, has been postponed to October 16 and 17.

The New York State Waterways Association, at its annual meeting in Watertown, N. Y., September 20, re-elected Henry Hill, of Buffalo, president. The secretary is S. S. Ellsworth, Rochester.

H. G. Askew, statistician for the Texas railways, has issued a statement showing that during the fiscal year 1912 these roads paid $2,923,944 in settlement of damages for personal injury, an increase of $420,114 over the previous year.

In the federal court at Los Angeles, Cal., September 17, T. S. Minot, an attorney of San Francisco, acting for 32 complainants, entered suit against the Southern Pacific to recover damages for the alienation of 84,000 acres of oil lands in Fresno and Kern counties, California.

The Canadian Pacific, acting on the appeal of its telegraphers, following the recent decision by a government board has agreed to increase their pay 12 per cent. and to make the work day ten hours instead of eleven. There will also be an increase in the rate of pay for overtime. The operators had demanded 15 per cent. increase.

The Louisville & Nashville has secured from the federal court at Jackson, Ky., a temporary injunction against the state auditor to restrain the collection of taxes in accordance with the assessment which has been made for the present year. This assessment is said to be based on a valuation of $45,000,000, as compared with $11,000,000 last year.

The Atlantic lines of the Southern Pacific have recently made an appropriation for the purpose of purchasing and distributing seeds and buds to the small farmers in the territory damaged by the overflow of the Mississippi river last spring. Many of the farmers have been almost ruined by the floods and the seed contributions have met with a hearty appreciation by the Louisiana farmers.

A train of three electric cars propelled by power from Edison storage batteries was run over the Long Island Railroad this week from the Pennsylvania station, Manhattan, to Long Beach and back, carrying a party of guests. These cars have been built under the direction of R. H. Beach for the United Railway of Havana, Cuba. The cars weigh 39,000 lbs. each and have fixed axles. There are 200 cells of battery in each car.

A commemorative medal was awarded to the Chicago & North Western by the International Exposition of Hygiene, for the exhibit at Dresden, in 1911, as displayed and interpreted by the American Museum of Safety. The exhibit illustrated the methods of the safety committee system, which was first introduced on railways by the Chicago & North Western in 1910, and which has since been largely adopted by the railways of this country.

An important saving in the amount of payments for fire losses along its right of way is reported by the Atchison, Topeka & Santa Fe as the result of a special campaign for improvement in this respect. In 1910 the company had claims for 1,509 fire losses, amounting to $100,605. In 1911 there were 574 fires with claims amounting to $51,000. In the fiscal year 1912 the number of fires had been reduced to 135, and the expenditure for the payment of claims to only $6,000.

Dr. Neill, government conciliator, conferred last week at Norfolk with the Chesapeake & Ohio, the Norfolk & Western and the Virginian railways and the representatives of their conductors and trainmen, and it is said that the differences between employer and employee as to wages were satisfactorily adjusted. This week Dr. Neill and Judge Knapp have held conferences in Washington with representatives of the Southern, the Atlantic Coast Line and the Seaboard Air Line, for the same purpose.

The Lehigh Valley expects to make its New York terminus with the Central of New Jersey (instead of the Pennsylvania) some time in November. Trains will be transferred from the Lehigh Valley tracks to those of the Central of New Jersey about two miles from the terminus. The Jersey City station of the Central of New Jersey is being enlarged to accommodate the new business and the constant increase in the existing traffic. There are to be 20 platform tracks with Bush sheds.

In order to satisfy complaints made by residents of Ferguson avenue, in Hamilton, Ont., with regard to the noise made by the switching of locomotives in the company's yard, the Grand Trunk is now offering to purchase nearly the entire east side of the avenue at twice the assessed value of the land. Furthermore, the company will allow anyone who sells to remain on the land for one year rent free, provided the tenant assumes the responsibility for paying the taxes and water rates. The offer of the Grand Trunk involves $69,840.

Arrangements are being made to attach special Pullman cars to the Baltimore & Ohio train leaving Chicago at 5:45 Sunday evening, October 13, 1912, and arriving at Baltimore at 5:50 Monday evening, for the accommodation of the members of the American Railway Bridge and Building Association and the Supply Men's Association, who plan to attend the annual convention, in order that the members may go down in a party. Arrangements for reservations can be made by notifying the secretary of the association, C. A. Lichty, 207 Howard avenue, Austin Station, Chicago.

The Board of Estimate of New York City has under consideration a proposition for the establishment by the city of an extensive water-front freight terminal in South Brooklyn on the east shore of the bay; and Irving T. Bush, of the Bush Terminal Company, owner of extensive docks, factories and tracks on the water front in South Brooklyn, has proposed that the city take over the Bush Terminal, this to be done under a contract by which the operation of the terminal will continue to be carried on by the Bush company, the operating company to receive 5 per cent. of the gross income. A committee of the Merchants' Association has presented a report opposing the scheme.

Officers of the Grand Trunk say that the new railway which will connect the Central Vermont at Palmer with tidewater at Providence, R. I., an account of which was printed in the *Railway Age Gazette* of August 23, will be ready for business early next summer. It is also stated that two passenger steamers, which have been ordered by the Grand Trunk, for passenger and freight service between Providence and New York, and which are being built at Wilmington, Del., are to be ready for service about the same time, the contract calling for delivery next May. The Grand Trunk has contracted for the use of half of one of the large piers being built in Providence harbor by the state of Rhode Island.

The government's last purchase of ties to be delivered at Colon, Panama, was at $1.0175 per tie. A year ago they purchased at $0.788 per tie, which shows an advance of about 30 per cent. in price. This is the first time ties have ever sold above $1. There is an unprecedented demand for ties in the north and east, as well as foreign. Standard heart ties are now selling at $0.88 per tie, and sap ties, which are used for creosoting, at $0.70 per tie, delivered in New York, Philadelphia and Baltimore. Dealers are behind time on their orders. This advance is partly due to advance in ocean freight rates, but largely to the great scarcity of crosstie stumpage, the timber dealers realizing much more from standing timber by selling it to the sawmills, who can afford to pay so much more

than the crosstie manufacturer. It is expected that ties will be selling within a short time at $1 per tie for hearts, and $0.80 per tie for saps, delivered in New York, Philadelphia or Baltimore. There are inquiries on the market today for at least several million ties.—*New York Journal of Commerce.*

A Remarkable Record.

The railway accident record is depressing, no matter in what way one looks at it. When a large railway can and does show a record of no passengers killed in collision or derailment for five or ten years, the other side of the picture ought to be recognized, though probably some of us do not sufficiently appreciate this fact. Possibly the comparison is too involved, or the whole subject is too ponderous. However that may be, everyone will be interested in another comparison, a sidelight on the accident record, which has recently come from Pittsburgh.

John Campbell, a locomotive engineman of the Pennsylvania Lines West of Pittsburgh, and who for a number of years past has run a yard engine at Pittsburgh, retired from his position on September 6, after being in the service of the company continuously for 48 years; and he retires with a clear record. An officer of the road informs us that Campbell has never been suspended or censured, and never has had an accident which cost the company any money. Moreover, Campbell's engine not only never killed a human being during his 48 years of service, but it never even injured any person sufficiently to draw blood.

How to Conserve Freight Cars.

That throughout the next few months every freight car must be kept in service to the fullest possible extent is by this time known, at least in a general way, to everybody who is interested. That the carrying out of this rule is not a simple thing is shown by a circular which has been issued to station agents by J. W. Roberts, superintendent of car service of the Vandalia Railroad, in which are enumerated the loose nuts in the transportation machine that will need to be tightened and to which the agent must give his personal attention.

The principal points are the following: Shippers must not be allowed to take cars for loading before they are needed; cars must not be delivered to connecting roads with small quantities of freight which could be transferred; cars good enough to hold grain must not be used for freight which can go in some other car just as well; foreign cars must not be sent home empty because of being in bad order, when the bad condition can readily be repaired; care must be taken in delivering cars to industries for loading when shippers persist in sending their goods over other lines when they should be sent over the Vandalia; where industries want cars to be sent over other lines call upon the interested carrier to furnish the car; goods received from connecting lines must not be transferred into Vandalia cars except when the original car is absolutely unfit to run; shippers should be called upon to load cars to their full marked capacity plus the 10 per cent. limit; connecting lines must be watched to see that when cars are delivered to them in switching service they do not misuse the cars after they are released; shippers must be discouraged from ordering cars of special dimensions when cars of standard dimensions will serve their purpose.

In a circular issued to agents and yardmasters by the trainmaster, W. E. Burk, attention is called to the fact that improper diversions of cars have occurred in many cases when a little care would have prevented the error. Agents are reminded that freight house foremen, yard clerks and other subordinates should be fully informed of the requirements of the car service rules. These and other employees are reminded also that their knowledge of the details of the business should often enable them to offer to the officers valuable suggestions as to improvements in efficiency; and such suggestions are invited. Agents are also called upon to report delinquencies on the part of employees, shippers or connecting lines.

A circular which Mr. Roberts has issued to shippers and consignees also goes directly to the point. He reminds them that during the past four years, when cars have been plenty nearly all of the time, many irregular practices have been indulged in, both by the railways and the shippers; and that the time has arrived when these must be discontinued. Attention is called to the fact that the railways are not satisfied to collect demurrage on cars which are detained; cars are worth, at the present time, much more than any demurrage rate; cars, not dollars, are what the road asks for. Consignees who are working under the "average agreement," by which cars may be kept an almost unlimited number of days without suffering a penalty, are reminded that a due regard for the general efficiency of the service requires that every empty car be loaded promptly and that every loaded car be released promptly, regardless of whether or not delay would incur a penalty.

The Machinery of Law-Making.

A meeting of the state legislative board of the Brotherhood of Locomotive Engineers opened in Harrisburg, Pa., yesterday. The purpose of the gathering is to prepare bills to be presented to the next legislature. . . . The duties of the special legislative committee will be to remain in Harrisburg during the session of the legislature and devote their entire time in the interest of the bills which will be presented and indorsed by the engineers. Among the bills to be considered will be one providing for a uniform system of wages, changes in working hours and in the responsibility for the care of engines, and a stronger recognition of the brotherhood.—*Pittsburgh Times.*

President Worthington of the Alton Settles Shop Controversy.

President B. A. Worthington of the Chicago & Alton has recently settled a controversy with the company's shop employees at Bloomington, Ill., which for a time appeared to present serious aspects. Nine employees of the boiler shop decided they could no longer afford to pay the union dues and dropped their membership, whereupon the organization petitioned the management to discharge the men unless they returned to the union. The company took the position that the matter was one for the union to settle itself without interference by the management and the case had been submitted to the officers of the shop federation when President Worthington called a mass-meeting of the employees at Bloomington and went there to address them.

Mr. Worthington began by explaining that one of the first problems presented to him on assuming the presidency of the road was to take care of the deferred maintenance of equipment, amounting to about $500,000, and that his first idea was to have the work done in outside commercial shops in order to get the deferred work done as quickly as possible without interfering with current repairs. His attention having been called, however, to the fact that the shops at Bloomington had been closed for several months previously, he decided that it would be to the advantage of the employees and to the town if this money, 60 per cent. of which would take the form of wages for labor, were spent in having the work done at Bloomington. It developed that there was a shortage of machinists and the company secured 50 machinists from an employment agency at Cleveland. Mr. Worthington said that these men were engaged without reference to whether or not they were union men, and he discussed the entire situation with general reference to the relations between capital and labor in a frank and informal way, finally asking for a rising vote of the men as to whether they preferred to have the locomotives and cars taken from the Bloomington shops and repaired in outside shops or to have the half million dollars spent in Bloomington. Practically all those at the meeting stood up, signifying their preference for the latter. In a conference later with the federation committee Mr. Worthington declined interference with the matter and the question was soon dropped.

Co-operative Safety Congress at Milwaukee.

A Co-operative Safety Congress is to be held at the Hotel Pfister, Milwaukee, Wis., September 30 to October 5, under the auspices of the Association of Iron & Steel and Electrical Engineers. On Monday evening, September 30, will be held the annual safety dinner of the association, at which Dr. Charles P. Neill, U. S. commissioner of labor; James A. Emery, counsel of the National Association of Manufacturers, and R. W. Campbell, attorney for the Illinois Steel Company, will speak on the subject of safety. Wednesday afternoon, October 2, will be devoted to a transportation session, at which R. C. Richards, general claim agent and chairman of the central safety committee of the Chicago & North Western, will preside as chairman. A. Hunter Boyd, Jr., chairman of the general safety committee of the Baltimore & Ohio, will speak on Accidents Attributable to the Carelessness of Employees and How Best to Prevent Them. H. W. Belnap,

chief inspector of safety appliances of the Interstate Commerce Commission, will speak on Prevention of Accidents and What is Being Done by the Interstate Commerce Commission and the Results Thereof. Geo. Bradshaw, general safety agent of the New York Central Lines, will speak on Prevention of Accidents in Railway Shops and Roundhouses. S. M. Braden, general superintendent of the Chicago & North Western, will speak on Prevention of Accidents to Trainmen.

Rooms at the hotel have been assigned for safety exhibits under the direction of C. W. Price of the Wisconsin Industrial Commission. Any safety devices forwarded to him will be placed on exhibition. On Friday, October 4, the program provides for a joint session with the Co-operative Safety Congress.

The American Association of Railroad Superintendents.

The annual meeting of the American Association of Railroad Superintendents was held at the Planters' hotel in St. Louis on September 19 and 20. The St. Louis division of the association acted as host to the visiting members. The program included the report of the executive committee, with recommendations and changes in the articles of organization; the report of the committee on Transportation; the report of the committee on Interchange Car Inspection, with recommendations covering the M. C. B. committee's report on Overhead Car Inspection; report of committee on Train Rules with the proposed amendment to the by-laws providing for the appointment of members of the committee by the president. Papers were read on the following subjects: Identity of Men Employed in Train and Yard Service, by Charles Burlingame; Losses in the Handling of Bad Order Cars, by Charles Burlingame; Need for an Arbitration Committee, by T. B. Fogg; Hoof Weights, by J. A. Somerville and Safety First, by R. C. Richards, general claim agent of the Chicago & North Western. E. H. De Groot, president; C. Burlingame, vice-president, and H. R. Saunders, vice-president, were re-elected, and E. H. Harman was elected secretary and treasurer, succeeding W. C. Cooder.

International Congress of Refrigeration.

The third International Congress of Refrigeration will be held in Chicago, September, 1913. An exhibition will be held in connection with the congress. An association to manage this exhibition is now being organized.

Society of Railway Financial Officers.

The annual meeting of the Society of Railway Financial Officers will be held at the Marlborough-Blenheim hotel, Atlantic City, N. J., October 23-25.

MEETINGS AND CONVENTIONS.

The following list gives names of secretaries, dates of next or regular meetings, and places of meeting.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 53 State St., Boston, Mass. Convention, May, 1913, St. Louis, Mo.

AMERICAN ASSOCIATION OF DEMURRAGE OFFICERS.—A. G. Thomason, Boston, Mass.

AMERICAN ASSOCIATION OF GENERAL PASSENGER AND TICKET AGENTS.—W. C. Hope, New York.

AMERICAN ASSOCIATION OF FREIGHT AGENTS.—R. O. Wells, East St. Louis, Ill.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—E. H. Harman, St. Louis, Mo.; 3d Friday of March and September.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—H. C. Donecker, 29 W. 39th St., New York. Convention, October 7-11, Chicago.

AMERICAN ELECTRICAL RAILWAY MANUFACTURERS' ASSOC.—George Keegan, 165 Broadway, New York. Meetings with Am. Elec. Ry. Assoc.

AMERICAN RAILWAY ASSOCIATION.—W. F. Allen, 75 Church St., New York; annual, November 20, 1912, Chicago.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Convention, 3d week in Oct., Baltimore, Md.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—E. H. Fritch, 900 S. Michigan Ave., Chicago. Convention, March 18-20, 1913, Chicago.

AMERICAN RAILWAY MASTER MECHANICS' ASSOC.—J. W. Taylor, Old Colony building, Chicago.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—M. H. Bray, N. Y. N. H. & H., New Haven, Conn.

AMERICAN SOCIETY FOR TESTING MATERIALS.—Prof. E. Marburg, University of Pennsylvania, Philadelphia, Pa.; annual, June, 1913.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—C. W. Hunt, 220 W. 57th St., New York; 1st and 3d Wed., except June and August, New York.

AMERICAN SOCIETY OF ENGINEERING CONTRACTORS.—J. R. Wemlinger, 13 Park Row, New York; 2d Tuesday of each month, New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—F. J. Angier, B. & O., Baltimore, Md. Convention 3d week in January, 1913, Chicago.

ASSOCIATION OF AMERICAN RAILWAY ACCOUNTING OFFICERS.—C. G. Phillips, 143 Dearborn St., Chicago.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—J. R. McSherry, C. & E. 1., Chicago.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W. Ry., Chicago; annual, October 21-25, Chicago.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—P. W. Drew, 112 West Adams St., Chicago; annual, May 20, 1913, St. Louis, Mo.

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—G. P. Conard, 75 Church St., New York. Meeting Dec. 10-11, 1912, New Orleans, La.

CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk Ry., Montreal, Que.; 2d Tuesday in month, except June, July and Aug., Montreal.

CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 413 Dorchester St., Montreal, Que.; Thursdays, Montreal.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 North 50th Court, Chicago; 2d Monday in month, Chicago.

CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York; 2d Thurs. in Jan. and 2d Fri. in March, May, Sept., Nov., Buffalo, N. Y.

CIVIL ENGINEERS' SOCIETY OF ST. PAUL.—L. S. Pomeroy, Old State Capitol building, St. Paul, Minn.; 2d Monday, except June, July, August and September, St. Paul.

ENGINEERS' SOCIETY OF PENNSYLVANIA.—E. R. Dasher, Box 704, Harrisburg, Pa.; 1st Monday after 2d Saturday, Harrisburg, Pa.

ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—E. K. Hiles, 803 Fulton building, Pittsburgh; 1st and 3d Tuesday, Pittsburgh, Pa.

FREIGHT CLAIM ASSOCIATION.—Warren P. Taylor, Richmond, Va.

GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—E. S. Koller, 226 W. Adams St., Chicago; Wed. preceding 3d Thurs., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Executive Committee, 11, rue de Louvain, Brussels, Belgium. Convention, 1915, Berlin.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—C. G. Hall, 922 McCormick building, Chicago.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—L. H. Bryan, Brown Marx building, Birmingham, Ala.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—A. L. Woodworth, Lima, Ohio.

MAINTENANCE OF WAY MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—W. G. Wilson, Lehigh Valley, Easton, Pa. Convention, November 19-21, Chicago.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 95 Liberty St., New York. Convention, May, 1913, Chicago.

MASTER CAR BUILDERS' ASSOCIATION.—J. W. Taylor, Old Colony building, Chicago.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOC. OF U. S. AND CANADA.—A. P. Dane, B. & M., Reading, Mass.

NATIONAL RAILWAY APPLIANCES ASSOC.—Bruce V. Crandall, 537 So. Dearborn St., Chicago. Meetings with Am. Ry. Eng. Assoc.

NEW ENGLAND RAILROAD CLUB.—G. H. Frazier, 10 Oliver St., Boston, Mass.; 2d Tuesday in month, except June, July, Aug. and Sept., Boston.

NEW YORK RAILROAD CLUB.—H. D. Vought, 95 Liberty St., New York; 3d Friday in month, except June, July and August, New York.

NORTHERN RAILROAD CLUB.—C. L. Kennedy, C. M. & St. P., Duluth, Minn.; 4th Saturday, Duluth.

PEORIA ASSOCIATION OF RAILROAD OFFICERS.—M. W. Rotchford, Union Station, Peoria, Ill.; 2d. Tuesday.

RAILROAD CLUB OF KANSAS CITY.—C. Manlove, 1008 Walnut St., Kansas City, Mo.; 3d Friday in month, Kansas City.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 2 Rector St., New York; annual, November 20, 1912, New York.

RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Penna. R. R., Pittsburgh, Pa.; 4th Friday in month, except June, July and August, Pittsburgh.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOC.—J. Scribner, 1021 Monadnock Block, Chicago. Meetings with Assoc. Ry. Elec. Engrs.

RAILWAY GARDENING ASSOCIATION.—J. S. Butterfield, Lee's Summit, Mo.

RAILWAY DEVELOPMENT ASSOCIATION.—W. Nicholson, Kansas City Southern, Kansas City, Mo. Next meeting, Nov. 17, 1912, Cincinnati, Ohio.

RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Bethlehem, Pa. Convention, Oct. 8-11, Quebec.

RAILWAY STOREKEEPERS' ASSOCIATION.—J. P. Murphy, Box C, Collinwood, Ohio.

RAILWAY SUPPLY MANUFACTURERS' ASSOC.—J. D. Conway, 2135 Oliver bldg., Pittsburgh, Pa. Meetings with M. M. and M. C. B. assocs.

RAILWAY TEL. AND TEL. APPLIANCE ASSOC.—W. E. Harkness, 284 Pearl St., New York. Meetings with Assoc. of Ry. Teleg. Sups.

RICHMOND RAILROAD CLUB.—F. O. Robinson, Richmond, Va.; 2d Monday, except June, July and August.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—L. C. Ryan, C. & N. W., Sterling, Ill.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo.; 2d Friday in month, except June, July and Aug., St. Louis.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmonds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.

SOCIETY OF RAILWAY FINANCIAL OFFICERS.—C. Nyquist, La Salle St. Station, Chicago; annual, October 23-25, Atlantic City, N. J.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—E. W. Sandwich, A. & W. P. Ry., Montgomery, Ala.; annual, Oct. 17, Atlanta, Ga.

SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grant bldg., Atlanta, Ga.; 3d Thurs., Jan., March, May, July, Sept., Nov., Atlanta.

TOLEDO TRANSPORTATION CLUB.—J. G. Macomber, Woolson Spice Co., Toledo, Ohio; 1st Saturday, Toledo.

TRAFFIC CLUB OF CHICAGO.—Guy S. McCabe, La Salle Hotel, Chicago; meetings monthly, Chicago.

TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 290 Broadway, New York; last Tuesday in month, except June, July and August, New York.

TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Erie, Pittsburgh, Pa.; meetings monthly, Pittsburgh.

TRAFFIC CLUB OF ST. LOUIS.—A. F. Versen, Mercantile Library building, St. Louis, Mo. Annual meeting in November. Noonday meetings October to May.

TRAIN DESPATCHERS' ASSOCIATION OF AMERICA.—J. F. Mackie, 7042 Stewart Ave., Chicago.

TRANSPORTATION CLUB OF BUFFALO.—J. M. Sells, Buffalo; first Saturday after first Wednesday.

TRANSPORTATION CLUB OF DETROIT.—W. R. Hurley, L. S. & M. S., Detroit, Mich.; meetings monthly.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. & H. R., East Buffalo, N. Y.

WESTERN CANADA RAILWAY CLUB.—W. H. Rosevear, P. O. Box 1707, Winnipeg, Man.; 2d Monday, except June, July and August, Winnipeg.

WESTERN RAILWAY CLUB.—J. W. Taylor, Old Colony building, Chicago; 3d Tuesday of each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—J. H. Warder, 1735 Monadnock Block, Chicago; 1st Monday in month, except July and August, Chicago.

Traffic News.

The Chesapeake Steamship Company has let contracts to the Maryland Steel Company for building two steamers to be used on the line between Baltimore and Richmond. These vessels will cost $850,000 and will carry 400 passengers and 600 tons of freight each.

The Missouri Pacific has put in service a new fast merchandise freight train from St. Louis to Kansas City. The train leaves St. Louis every afternoon at 2 o'clock, and arrives at Kansas City at 7 the next morning. The train will carry merchandise for Kansas City and perishable freight for Kansas City or points beyond.

The movement of fruit from the west to New York this season has been very heavy. On the five regular fruit days of last week the number of cars received over the Erie road was 491. About 85 per cent. of the fruit comes from California. One trainload of fruit has been received at New York this season for South America.

The Kansas City Board of Trade has recently addressed a bulletin to its members advising them of the necessity of cooperating with the railways if a severe car shortage is to be prevented this fall. The bulletin enumerates various ways in which a release of equipment is delayed by shippers, with suggestions and remedies for each.

At the Grand Central Terminal, New York, in the eight days from August 30 to September 6, inclusive, the number of passengers, outward and inward, amounted to 944,000. This is the largest number ever recorded in a similar length of time. The number of trains was 4,826, an increase of 82 over the same period of 1911; and the number of cars was 31,269.

The "Indiana Live Stock Lecture Train" is the name of an instruction train which is to be run next week over the lines of the Pittsburgh, Cincinnati, Chicago & St. Louis in the state of Indiana. G. I. Christie, superintendent of the department of agricultural extension of Purdue University, accompanied by twelve lecturers, will go on the train to give lectures at 29 towns on the management of beef and dairy cattle, on the raising of sheep and hogs, and on other allied topics. Division superintendents and division freight agents of the road will accompany the train.

B. C. Stevenson, vice-president of the Toledo, St. Louis & Western, has addressed a circular letter to the company's agents, asking each agent personally to call on shippers and receivers at his station, and explain to them the conditions which are expected to tax the equipment of the carriers to the utmost during the coming fall and winter, and to ask them, so far as consistent, to place their orders at this time for coal, lumber and lime, cement, brick and other material that they expect to ship or receive later on. The shippers are also to be asked to load cars as near to the carrying capacity as commercial conditions will permit, thereby increasing the sufficiency of the available equipment in the interest of all concerned.

The Congressional (House) Committee on Merchant Marine and Fisheries, which is making an investigation of the "shipping trust," has issued a circular calling on the railways of the country for information in regard to their relations with steamship lines. The roads are called on to give names of all water transportation companies any portion of whose stock or bonds or other securities are owned by them, with the amount of each and the date of acquisition. They must also give the names of all water carriers in which they have obtained any interest by ownership, mortgage, lease or agreement, and also any forwarding, towing, dock, warehouse, lighterage or canal companies. Traffic agreements, through routing arrangements, methods of meeting the competition of other lines, time and number of sailings between designated ports and the fixing, maintenance and division of joint rates, must be explained. Copies of all agreements and understandings with water carriers must be furnished.

Traffic Club of Chicago.

An interclub field day will be held by the Traffic Club of Chicago and the Chicago Transportation Association at the White Sox ball park, Chicago, on October 1. Among the features will be a ball game between the uniformed teams of the two associations, the prize for which will be a silver cup. Other athletic events will be held.

Railway Earnings in 1912.

Slason Thompson, manager of the bureau of railway news and statistics, has compiled a statement showing that, "with gross revenues the largest in their history, the net income of the railways of the United States for the year ending June 30, 1912, after deducting operating expenses and taxes, amounted to $762,663,579, or 3.81 per cent. on their estimated value of $20,000,000,000.

"Analysis of the returns shows," he says, "that had the expenditure for maintenance of road and equipment been on a scale commensurate with the normal advance in the demands made on their railways by the American people the net results would have been at least $100,000,000 less satisfactory from the income point of view. Then there would have been less reason to anticipate a car shortage whenever traffic resumes normal proportions."

Total operating revenues, according to Mr. Thompson's compilations from the monthly bulletins of the interstate commerce commission down to May, and from unofficial sources for June, were $2,873,279,987, or $11,250 per mile of line.

Total operating expenses were $1,990,041,981, or $8,073 per mile of line, and the operating ratio was 69.26 per cent.

"The telltale ratio of operating expenses to operating revenues emphasizes the story of the gross figures," says Mr. Thompson. "An average of 69.26 per cent. for the year is without a parallel in American railway experience, except during 1907-08, when the companies were unable to reef down their expenses quickly enough to meet a sudden drop of over $300,000,000 in their revenues in one year. An average ratio of 72.71 per cent. for the last half of the year shows what a hard winter and high wages can do to dissipate the 'exorbitant profits' which American railways are supposed to make, but have never known. Provision for the inevitable tomorrow has always kept profits within reasonable bounds."

Coal in Canada.

A quarter of a million dollars will be spent by the Jasper Park Collieriès, on a new permanent plant at the mines in Jasper National Park on the main line of the Grand Trunk Pacific, west of Edmonton. These mines are in the heart of the Jasper National Park, situated on a high plateau, commanding magnificent views of Mount Miette. About 50 houses have already been built, of which 40 are occupied by the men and the rest are adapted for offices, stores and for management purposes. Another 40 houses for the men will be erected almost at once.

The machine shops are nearly completed and it is expected that the mines will be in full operation by December 1. The G. T. P. will shortly use Jasper Park coal on the locomotives on the three sections east of Edmonton. The coal is a high grade bituminous.

Car Surpluses and Shortages.

Arthur Hale, chairman of the committee on relations between railways of the American Railway Association, in presenting statistical bulletin No. 127, giving a summary of car surpluses and shortages by groups from May 24, 1911, to September 12, 1912, says: The total surplus on September 12, 1912, was 27,380 cars; on August 29, 1912, was 36,047 cars; and on September 13, 1911, was 70,722 cars. Compared with the preceding period; there is a decrease in the total surplus of 8,667 cars, of which 6,274 is in box, 568 in flat, 1,842 in miscellaneous and an increase of 17 in coal car surplus. The decrease in box car surplus is general throughout the country excepting in groups 7 (Montana, Wyoming and Nebraska), and 11 (Canadian lines). The decrease in flat car surplus is chiefly in groups 2 (New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania), 3 (Ohio, Indiana, Michigan and Western Pennsylvania), 6 (Iowa, Illinois, Wisconsin, Minnesota and the Dakotas), 8 (Kansas, Colorado, Missouri, Arkansas and Oklahoma), and 10 (Washington, Oregon, Idaho, California, Nevada and Arizona). An increase in coal car surplus is in groups 1 (New England

lines), 4 (the Virginias and the Carolinas), 6 and 8 (as above); while groups 2 and 3 (as above), 5 (Kentucky, Tennessee, Georgia, Alabama and Mississippi), 9 (Texas, Louisiana and New Mexico) and 10, (as above) show a decrease in coal car surplus. The decrease in miscellaneous car surplus is general, excepting in groups 2, 7, 9 and 10 (as above).

The total shortage on September 12, 1912 was 36,000 cars; on August 29, 1912, was 26,297; and on September 13, 1911, was 6,439. Compared with the preceding period; there is an increase in the total shortage of 9,703 cars, of which 7,930 is in box, 3 in flat, 1,323 in coal and 447 in miscellaneous. The increase in box car shortage is general throughout the country excepting in groups 7 and 11 (as above). The increase in coal car shortage is chiefly in groups 2, 3, 4, 5 and 8 (as above). An increase in flat car shortage is shown in groups 2, 3, 5, 6 and 9 (as above), while groups 1, 4, 8, 10 and 11 (as above) show a decrease in flat car shortage. The increase in miscellaneous car shortage is general throughout the country excepting in groups 7, 9 and 11 (as above).

Compared with the same date of 1911; there is a decrease in the total surplus of 43,342 cars, of which 11,513 is in box, 1,962 in flat, 18,485 in coal and 11,382 in miscellaneous cars. There is an increase in the total shortage of 29,561 cars, of which 19,385 is in box, 2,060 in flat, 6,682 in coal and 1,434 in miscellaneous cars.

The accompanying table gives car surplus and shortage figures by groups for the last period covered in the report and totals for the country for corresponding dates in previous years; and the diagram shows total bi-weekly surpluses and shortages from 1907 to 1912.

Summary of Revenues and Expenses of Steam Roads in June.

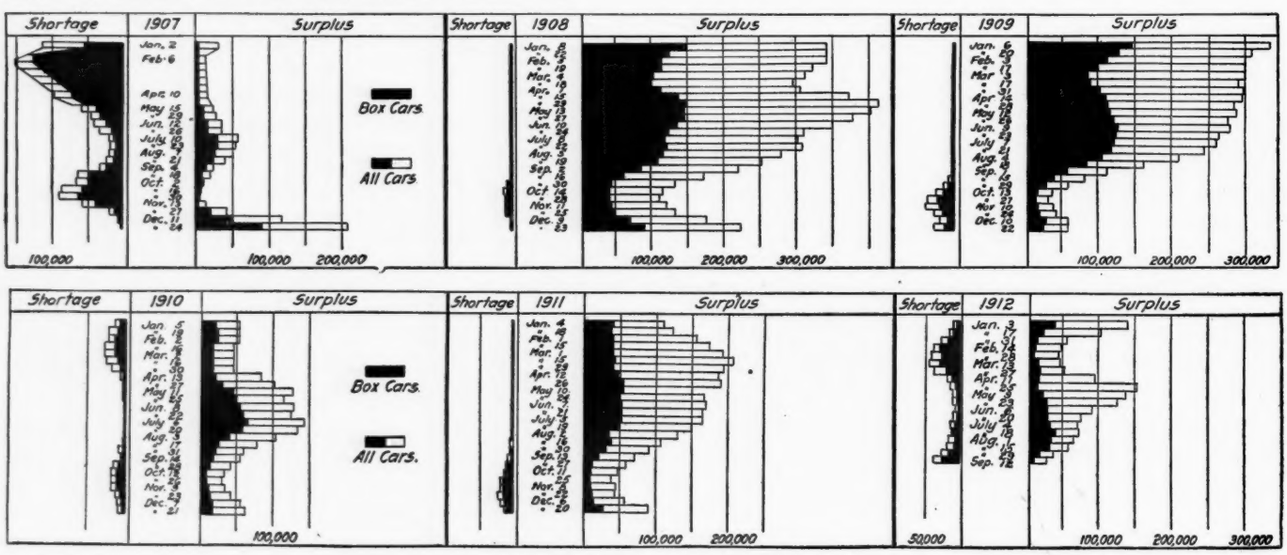
The Bureau of Railway Economics' summary of revenues and expenses and comments thereon are as follows: The railways whose returns are included in bulletin No. 37 operate 219,572 miles of line, or 90 per cent. of all the steam railway mileage in the United States. The total operating revenues for the month of June, 1912, amounted to $236,912,076. Compared with June, 1911, the total operating revenues of these railways show an increase of $14,454,955. These total operating revenues per mile of line amounted to $1,079 in June, 1912, and $1,034 in June, 1911, an increase for 1912 of $45, or 4.4 per cent. This increase was the resultant of an increase of 5.3 per cent. in the freight revenue, of 1.0 per cent. in the passenger revenue and increases in other transportation and non-transportation revenue.

Operating expenses amounted to $162,145,192. This was $9,912,738 more than for June, 1911. These operating expenses per mile of line amounted to $738 in June, 1912, and $707 in June, 1911, an increase for 1912 of $31 per mile, or 4.4 per cent. Each of the five primary operating expense accounts showed an increase for 1912 except general expenses, which decreased 3.9 per cent. In the cost per mile of maintaining way and structures, there was an increase compared with June, 1911, of 7.1 per cent.; in the cost per mile of maintaining equipment an increase of 4.6 per cent.; in traffic expenses per mile an increase of 4.2 per cent.; in transportation expenses per mile an increase of 3.8 per cent. Net operating revenue amounted to $74,766,884. This was $4,542,217 more than for June, 1911. Net operating revenue per mile of line amounted to $341 in June, 1912, and $326 in June, 1911, an increase for 1912 of $14 per mile, or 4.4 per cent. The net operating revenue for each mile of line for each day in June, 1912, averaged $11, and for June, 1911, $11.

Car Surpluses and Shortages.

Date.	No. of roads.	Surpluses Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.	Shortages Box.	Flat.	Coal, gondola and hopper.	Other kinds.	Total.
Group *1.—September 12, 1912	7	266	125	2	110	503	694	168	514	2	1,378
" 2.— " 12, 1912	25	354	46	664	482	1,546	2,133	175	1,124	216	3,648
" 3.— " 12, 1912	29	141	66	18	133	358	3,632	371	2,268	464	6,735
" 4.— " 12, 1912	11	76	6	472	374	928	2,955	740	1,835	435	5,965
" 5.— " 12, 1912	23	170	0	160	704	1,034	2,732	966	1,335	12	5,045
" 6.— " 12, 1912	24	2,232	106	1,100	2,823	6,261	6,357	217	868	295	7,737
" 7.— " 12, 1912	2	20	88	0	134	242	405	0	79	0	484
" 8.— " 12, 1912	17	76	69	823	1,753	2,721	2,308	243	308	44	2,903
" 9.— " 12, 1912	12	1,392	186	379	454	2,411	279	5	0	0	284
" 10.— " 12, 1912	19	929	542	1,692	5,665	8,828	1,342	0	0	68	1,410
" 11.— " 12, 1912	6	2,250	51	0	247	2,548	0	297	0	114	411
Total, September 12, 1912	175	7,906	1,285	5,310	12,879	27,380	22,837	3,182	8,331	1,650	36,000
" September 13, 1911	166	19,419	3,247	23,795	24,261	70,722	3,452	1,122	1,649	216	6,439
" September 14, 1910	145	17,786	2,854	13,047	21,203	54,890	3,368	1,093	2,474	879	7,814
" September 15, 1909	177	38,342	4,767	16,255	19,434	78,798	3,294	423	3,346	362	7,425
" September 16, 1908	163	58,668	12,200	66,891	35,828	173,587	2,252	104	311	268	2,935

*Group 1 is composed of New England lines; Group 2—New York, New Jersey, Delaware, Maryland and Eastern Pennsylvania lines; Group 3—Ohio, Indiana, Michigan and Western Pennsylvania lines; Group 4—West Virginia, Virginia, North and South Carolina lines; Group 5—Kentucky, Tennessee, Mississippi, Alabama, Georgia and Florida lines; Group 6—Iowa, Illinois, Wisconsin, Minnesota and the Dakotas lines; Group 7—Montana, Wyoming and Nebraska lines; Group 8—Kansas, Colorado, Missouri, Arkansas and Oklahoma lines; Group 9—Texas, Louisiana and New Mexico lines; Group 10—Oregon, Idaho, California and Arizona lines; Group 11—Canadian lines.



Car Surpluses and Shortages, 1907 to 1912.

Taxes for the month of June amounted to $10,379,746, or $47 per mile, an increase of 16.6 per cent. over June, 1911.

The operating ratio for June, 1912, was 68.4 per cent., which is comparable with 71.4 per cent. in May, 1912, and 68.4 in June, 1911.

The eastern group of railways shows an increase in total operating revenues per mile of line as compared with June, 1911, of 7.3 per cent.; the southern group shows an increase of 6.3 per cent., and the western group an increase of 0.9 per cent. Operating expenses per mile increased 4.8 per cent. on the eastern railways as compared with June, 1911, 7.9 per cent. on the southern railways, and 3.0 per cent. on the western railways. In the eastern group net operating revenue per mile decreased 12.7 per cent. as compared with June, 1911, in the southern group it increased 2.4 per cent., and in the western group there was a decrease of 3.6 per cent. The increase in taxes per mile, compared with June, 1911, was 23.6 per cent. in the eastern group, and 17.4 per cent. in the western group. In the southern group there was a decrease of 1.5 per cent.

When the returns for the six months of the calendar year 1912 are compared with those of the corresponding months in 1911, they show an increase in total operating revenues per mile of 2.4 per cent., an increase in total operating expenses per mile of 4.4 per cent., and a decrease in net operating revenue per mile of 2.7 per cent. There was a decrease in net operating revenue per mile of 0.3 per cent. in the eastern group, a decrease of 8.1 per cent. in the southern group, and a decrease of 2.6 per cent. in the western group.

The accompanying diagram shows monthly revenues and expenses per mile of line. The points on the vertical line are alone of significance in showing the condition for the particular month, since the figures are not cumulative. The following table shows the per cent. of total operating revenues consumed by each class of operating expenses:

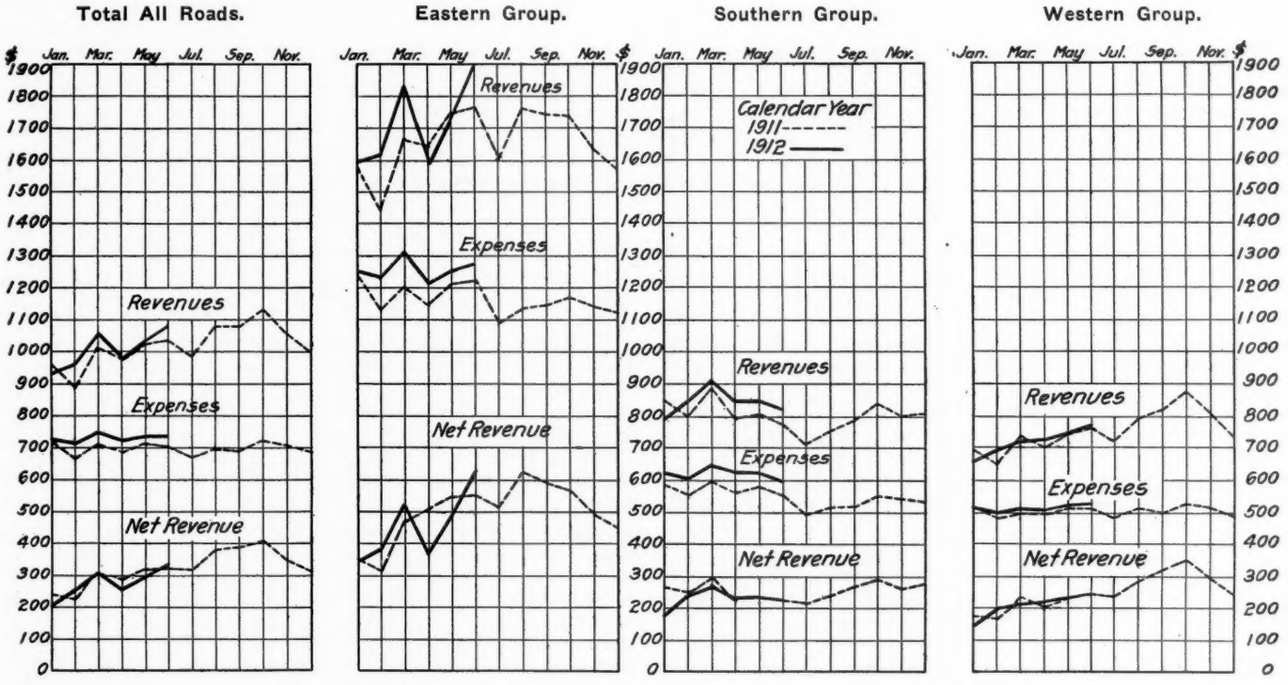
PER CENT. OF TOTAL OPERATING REVENUES.

	June,		Fiscal year ended June 30,		Calendar year ended December 31,	
	1912.	1911.	1912.	1911.	1911.	1910.
Maint. of way and structures	14.7	14.3	12.7	12.9	12.7	13.3
Maint. of equipment	15.2	15.2	15.8	15.5	15.5	15.3
Traffic expenses	2.2	2.2	2.2	2.2	2.1	2.1
Transportation expenses	33.8	34.0	35.9	35.5	35.4	34.7
General expenses	2.5	2.7	2.5	2.5	2.6	2.4
Total operating expenses	68.4	68.4	69.1	68.6	68.3	67.8

Enterprising Farmers on Long Island.

Potatoes and cauliflower are the principal crops grown on Long Island. Last year the Long Island Railroad hauled 51,060 tons of potatoes and 13,824 tons, or approximately 250,000 barrels, of cauliflower. The national government has rendered invaluable assistance to the American farmer, and is still doing so; and the railways have helped in many ways, well known; but the farmer himself has not been standing still. In various sections farmers have organized clubs for the purpose of ascertaining the best markets and to learn the best methods of increasing production. On Long Island there is what is known as the Long Island Potato Exchange. This exchange disposes of its members' potato crops, sells them fertilizers at prices more favorable than they could obtain elsewhere, and deals in seed potatoes. At present there is a movement on foot to buy farm land in Maine and grow seed potatoes, for the exclusive benefit of the members.

Then there is the Long Island Cauliflower Association, the prime movers of which are the farmers themselves. This organization came into existence about ten years ago, and coincident with its formation, the Long Island Railroad put in service a Cauliflower Special, which train has been running ever since. Besides having a representative on board the train who looks after shipments made by members, the association arranges for the supply of barrels and sells to the farmers the cauliflower seed, which is imported from Denmark. Merchants in Philadelphia, Baltimore, Columbus, St. Louis, Chicago and New Orleans now buy about 350 carloads of Long Island cauliflower each year. The farmers' prosperity depends on the elimination of the middleman, and by organizing selling agencies of their own this can gradually be accomplished.—*Ralph Peters, President of the Long Island Railroad.*



Monthly Revenues and Expenses per Mile of Line in 1911 and 1912.

Railway Business Association's Appeal.

The Railway Business Association reports that several thousand shippers and receivers of freight have signed the association's memorial to the interstate commerce commission pledging support for a policy permitting to the railways earnings adequate for the provision of needed facilities. The memorial urges a policy toward railways which will provide that in all adjustments of rates adequate revenue shall be insured them to meet existing obligations and to attract capital for necessary improvements and extensions.

Chairman Prouty of the interstate commerce commission is

quoted as having said in his recent address at Kansas City, Mo.:

"The danger point today is with respect to service and facilities. It is the general idea that the commission's business is to stand for the shipper against the railways. I would remind you that conditions have changed from what they were several years ago and that it is as much our duty to see that the railways are allowed reasonable rates as for us to look at the matter only from the standpoint of the shipper. The railways must make sufficient money both for the paying of their current expenses and for the profit to their stockholders, to whom we look for the investment."

The Railway Business Association feels confident that in so purely an administrative matter as the development of a general policy the commission will not consider its dignity impugned by the suggestion that the precedents laid down in the Spokane and other cases may wisely and in the public interest be extended so as to have a wider application. The public is ready for the installation of a liberal policy. Those who finance and execute plans for railway improvements and additions must be convinced beyond peradventure that the tendency of rate regulation will be to foster the financial stability of the roads. Such a conviction will be most effectively carried home by action of the interstate commerce commission and reassurance most wisely given if it originates with the commission on its own motion.

Although gross receipts increase, the railways are unable to keep unimpaired the item which is the investor's barometer—namely, the annual surplus. It will not make the investor feel any better about it if told that nobody intends to injure the roads. What will persuade him to invest his money is that the roads shall be actively protected and that such active protection shall be a permanent policy.

The commission said to the trunk lines in 1911 that should their fears be realized increases would be "sanctioned." This would suggest that it is for the railways to bring the subject up again. But the railways as a whole, or large groups of roads, often find themselves unable to agree upon proposals to be laid before the commission. Geographical and other conditions create natural and deep-lying differences of interest between the railways of one region and those of another. Competition and differences of prosperity make agreements difficult as between the members of a group of roads in one region. Under those conditions must the shipper and the public wait for facilities until the railways ask for rate advances? We cannot believe the commission would permit an indefinite succession of car shortages due to inadequate revenue to plague American industry without taking action on its own motion.

The commission is in one respect situated fortunately for the country. We know of no tribunal in the history of the government which has enjoyed in greater degree the confidence of the general public. Its opinions will command acceptance as would those of no other body. The commission has, therefore, an exceptional opportunity to promote the national prosperity.

Chairman Prouty Advocates Branches of Interstate Commerce Commission.

In an address before the Chicago Transportation Association, at Chicago, on September 19, Charles A. Prouty, chairman of the Interstate Commerce Commission, declared that the amount of work now imposed on the commission has reached such a volume that a reorganization of the commission is necessary. Without stating explicitly his opinion as to how this should be accomplished, he suggested the establishment of branches of the commission at important centers to be presided over by deputy commissioners who would decide small cases, subject to appeal to the commission at Washington. Chairman Prouty said in part:

"From an insignificant body limited to the power of investigation and the compiling of an annual volume of statistics, the commission has come to be overwhelmed with work. Some new system has got to be devised by which the commission can be relieved of part of the duties continually imposed upon it. The volume of business over which the Interstate Commerce Commission has jurisdiction, expressed either in tonnage or in dollars, greatly exceeds all that which the state commissions in all states have charge of. It also presents questions far more complicated and difficult than those presented in the states, and we are required to deal with many questions entirely absent in their work."

Chairman Prouty then gave a brief outline to show the volume of work handled by the commission. Speaking first of the conference work, he said that there were thousands of persons from all parts of the country who desire to see in person some member of the commission, to lay before him something which they deem ought to be corrected. If the commission acceded to these requests for personal conferences, its entire time would be occupied in seeing people who are willing to travel anywhere from a few hundred to thousands of miles for the purpose of securing half an hour's talk with the commissioners, and the commission is therefore obliged to decline a majority of such applications. However, about two hours is devoted every day by each member of the commission to such conferences. The administrative work of the commission having to do with the filing of tariffs, the supervision of accounts and the compilation of statistics, etc., is largely turned over to subordinate boards, and a great part of the thousands of letters sent out over the signature of the secretary are never seen by him. However, the desk of each commissioner every morning contains a mass of letters which no one but himself can answer, and probably two hours a day of the time of each commissioner is devoted to this work. A third important branch of the commissioners' work is the hearing of evidence in cases filed with the commission, the hearing of arguments and the preparation of opinions. Formerly the commissioners heard these cases themselves, but they are now obliged to turn a large number of them over to examiners, reserving the most important cases. The time has now come, Mr. Prouty thought, when the commissioners can no longer hear these cases. At the present time they are spending more hours on the bench hearing evidence and listening to arguments than the supreme court of the United States.

"I believe it is now necessary," he said, "to devise some method by which certain parts of the work which now comes to Washington can be intercepted before it gets there. It will be of no avail to appoint more commissioners. In fact five men could handle the work easier than seven, but in many cases it is demanded that the decisions of the commission shall represent the opinions of seven men. The administrative work, of course, must be done at Washington, and handled as a unit, but as far as the conference work and the hearing of cases is concerned, I have believed there ought to be branches of the Interstate Commerce Commission in every important center, something in the nature of deputy commissioners who will act for the commission insofar as the hearing and deciding of cases is concerned. Half of the time the shipper who feels he has a grievance does not know whether he has a case or not, and a few minutes of personal conference is better than a ream of correspondence. One or two such commissioners in Chicago for instance, could adjust half of the cases without the necessity of a formal complaint. Without indicating whether or not these deputies should be appointed by the Interstate Commerce Commission or by the government, I would suggest that men of the highest grade be selected, such men as would be selected for a vacancy in the Interstate Commerce Commission, and who should be paid enough to induce acceptance. Their decisions should have the effect of orders of the commission itself, and their conclusions should become effective subject to the right of appeal to the commission at Washington."

Chairman Prouty introduced his remarks with a brief outline of the development of the commission from the days in which, as he said, it had little power but that of investigation. Since that time he said, "it has come to be what I believe to be the most important administrative tribunal in the whole world. I have always felt that sooner or later the people of this country would be obliged to regulate and control the railway, and that they would no more entrust the railways to the unlimited control of private capital than they would the highways of the country. We may find that this form of regulation is not practicable. It may turn out that you cannot in that way attract the investment of the necessary capital, but certainly the railways must be controlled, and if they cannot be controlled by regulation then they must be owned by the government."

INTERSTATE COMMERCE COMMISSION.

Chairman Prouty, at a hearing in Chicago on September 19 and 20, heard evidence in two important cases involving large claims for reparation. In the case of the Texas Cattle Raisers' Association against the Missouri, Kansas & Texas and others, the complainants asked for reparation on all shipments of cattle

from Texas to Kansas City, St. Louis and Chicago, affected by the decision of the commission in 1908. It is estimated that the reparation sought will exceed over $1,000,000. In the case of the Michigan Hardwood Manufacturers' Association against the transcontinental lines, reparation was asked to the amount of 5 cents per 100 lbs. on shipments of hardwood from southern Michigan to the Pacific coast, as representing the difference between the 85 cent rate from Michigan and the 80 cent rate which the commission held to be reasonable from Memphis. Chairman Prouty also heard evidence in a case involving an advance of 6 cents per 100 lbs. on the carload rate on furniture, which has been suspended by the commission on complaint of the National Association of Furniture Manufacturers.

STATE COMMISSIONS.

The Indiana commission has adopted the demurrage rules recently agreed upon by the railways and the National Industrial Traffic League except in two features. The commission insists on rules exempting from demurrage cars standing at mines or on mine sidings loaded with unbilled coal and allowing Sundays and holidays to be excluded from the periods in which demurrage must be calculated under the "average rule." "Unbilled coal" would seem to be a convenient device by which to evade payment of any demurrage whatever.

The California public service commission has issued a general order requiring all public utility companies to file with the commission a list of such rates as depart from the standard schedule on account of contracts for right of way, etc., employees, charitable or educational purposes, etc. Another general order requires all railways to submit to the commission for its approval all proposed changes in schedules of regular passenger trains and to post notices of changes ten days before the effective date.

Representatives of the northern transcontinental railways appeared on September 16 at a hearing before the Washington public service commission at Seattle on proposed reciprocal demurrage rules drawn by the commission, which will require the railways to pay $3 per car per day for failure to supply cars when ordered. The railway men asked the commission to modify the rules so that shippers ordering cars would be required to deposit a bond for $20 for the first car and $15 for each additional car ordered, as indemnity in case the cars were not used.

Powers of Receivers.

Deciding the case of the receivers of the Ithaca Street Railway, who ceased running cars on a short section of the line under their charge because it did not pay, and directing them to resume operation, the New York Public Service Commission, second district, says:

"The whole scope and intent of the law seems to place the receivers of a railway in the precise position of the railway itself, so far as regulation by the commission is concerned. They are mere custodians of the property, appointed by the court to preserve it and to operate it, and it is the duty of the commission to see that all street railway properties under its supervision shall be operated in the interest of the public, proper accommodations afforded and proper service given. Considering the number of leased lines of railway within the state, the frequency of receiverships, the manifest inconvenience to the public which may be created by entrusting the power of discontinuing service to mere custodians of property without any regulation or supervision whatever; considering the intent of the legislature to subject all operations of railway corporations as to the character and extent of service to the commission, the commission is convinced that the proper construction of the Public Service Commission Law is that the right of the receiver to discontinue service upon leasehold property described in the mortgage and committed to his care by order of the court, must be exercised subject to the commission's power.

COURT NEWS.

Judge Cushman, in the federal court at Tacoma, has handed down a decision sustaining the Public Service Commission of the state of Washington in its order prescribing freight rates in that state. The commission's authority had been challenged in court by the Northern Pacific and the Great Northern.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF JULY, 1912.

Name of road.	Mileage operated at end of period.	Operating revenues			Operating expenses					Net operating revenue (or deficit).	Outside operations, net.	Taxes.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total. inc. misc.	Maintenance Way and structures.	Maintenance Of equipment.	Traffic.	Transportation.	General.	Total.					
Ann Arbor	292	$104,624	$56,603	$173,144	$21,242	$19,946	$4,165	$63,095	8,807	$117,255	$55,889	$501	$13,930	$42,460	—$643
Atlanta & West Point	93	41,711	42,728	93,443	13,555	18,243	5,410	32,015	5,546	74,769	18,674	69	5,678	13,065	—10,225
Atlantic City	167	74,019	233,363	320,546	20,415	14,823	8,589	127,791	1,765	173,383	147,163	—5,381	9,000	132,782	—25,568
Belt Ry. Co. of Chicago	213	.....	.....	237,454	14,159	30,818	464	92,016	4,017	141,474	95,980	.....	6,540	89,440	14,077
Canadian Pacific Lines in Maine	233	40,984	18,635	67,814	38,921	11,398	5,389	29,827	3,804	89,139	—21,325	.....	10,000	—31,325	—858
Central of New Jersey	669[1]	1,774,429	575,356	2,476,185	215,123	347,727	30,077	701,275	41,450	1,335,652	1,140,533	59,453	128,189	1,071,797	235,384
Central Vermont	411	221,455	108,621	360,260	46,058	53,484	8,432	178,915	7,237	294,126	66,134	—290	12,200	53,644	—33,050
Chicago & Northwestern	7,960[2]	4,184,847	1,891,888	6,708,801	944,358	947,788	117,683	2,484,711	125,294	4,619,834	2,088,967	—432	303,000	1,785,535	217,367
Cleveland, Cincinnati, Chic. & St. Louis	2,012[3]	1,664,924	715,641	2,602,070	363,146	439,481	68,283	1,000,481	56,547	1,927,938	674,132	—339	95,000	578,793	—159,096
Delaware & Hudson R. R. Dept	854[4]	1,657,587	328,608	2,052,532	175,796	271,787	27,866	667,419	55,164	1,198,032	854,500	—4,353	49,000	801,147	73,468
Georgia	307	150,363	81,987	249,933	27,630	49,701	11,696	133,712	8,125	230,864	19,069	.....	2,920	16,149	—21,643
Georgia, Southern & Florida	395	99,595	68,686	192,291	20,801	38,846	6,683	82,976	8,982	158,288	34,003	.....	10,626	23,377	—10,909
Hocking Valley	352	555,749	81,654	690,036	74,966	136,398	8,572	195,165	14,872	429,973	260,063	.....	34,800	225,263	52,586
Missouri, Kansas & Texas of Texas†	...	.....	.....	.....	.....	.....	.....	.....	6,863	.....	57,294	.....	.....	.....	.....
New Orleans Great Northern	283	106,505	31,381	147,686	22,379	15,764	2,488	42,898	7,365	90,392	—54	1,850	1,850	55,396	13,501
New Orleans, Mobile & Chicago	547[5]	138,182	31,398	180,820	33,483	20,982	3,353	64,945	2,863	130,128	62	4,154	46,600	5,343	
Oahu Ry. & Land Co	101[6]	80,670	21,831	108,292	6,904	7,241	513	21,216	4,118	39,992	68,300	4,392	6,500	66,192	7,110
Toledo, St. Louis & Western	451	235,722	31,332	289,330	57,005	47,487	7,298	108,758	8,856	229,404	59,926	.....	14,800	45,126	—40,470
Ulster & Delaware	129	66,564	78,345	151,292	16,477	14,865	2,107	48,396	2,384	84,229	67,063	—210	3,300	63,553	—1,508
Western Maryland	543	432,630	109,290	567,379	66,273	76,965	11,060	211,335	13,062	379,195	188,184	.....	20,000	168,184	—26,203
Western Ry. of Alabama	133	44,020	44,036	96,394	20,611	23,777	5,646	30,639	5,522	86,195	10,199	—62	4,640	5,497	—6,184

† Merged with Missouri, Kansas & Texas Ry. Co. and the Texas Central Railroad, all three now operating as the Missouri, Kansas & Texas Railway System.
Average mileage operated during previous period—[1] 672; [2] 7,754; [3] 2,009; [4] 852; [5] 404; [6] 99.

Railway Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

Charles S. Mellen, president of the New York, New Haven & Hartford, has been elected also president of the New York, Ontario & Western, succeeding Thomas P. Fowler, resigned. An account of Mr. Fowler's railway career appears on another page.

George H. Schleyer, superintendent of the St. Louis & San Francisco at Enid, Okla., has been appointed vice-president and general manager of the St. Louis, San Francisco & Texas, with headquarters at Ft. Worth, Tex., succeeding J. H. Elliott, resigned.

Thomas Bird Dixcy, whose appointment as general auditor of the St. Louis & San Francisco, with office at St. Louis, Mo., has been announced in these columns, was born June 9, 1867, at Philadelphia. He was educated at Cheltenham Military Academy, Shoemakertown, now Ogontz, Pa. Mr. Dixcy began railway work in the office of the auditor of passenger receipts of the Pennsylvania at Philadelphia about 1884. He remained in this position a few months, and was then until 1893 in the wholesale dry goods business in New York, and with the Spiral Weld Tube Company at East Orange, N. J. He went with the Chicago, Rock Island & Pacific as cashier in the office of the assistant treasurer in New York in December, 1893, and three and one-half years later was made assistant treasurer at Topeka, Kan. From December, 1900, to January, 1904, he was out of railway work and engaged in professional accounting in the New York office of Haskins & Sells, having been manager of that office from June, 1902. He was made assistant to the vice-president, in charge of the accounting department, of the Delaware & Hudson Company at Albany, N. Y., in January, 1904, where he remained until December, 1907. He subsequently opened an office as a certified public accountant in New York, specializing in railway work and important cases in litigation, and on September 12, 1912, closed his office to become general auditor of the St. Louis & San Francisco as noted above.

Operating Officers.

F. W. McIntosh has been appointed superintendent of dining car service of the Chicago & Alton, with headquarters at Chicago, succeeding W. J. Witte, resigned.

H. W. Hamilton has been appointed assistant superintendent of the Northern division of the Chicago Great Western, with headquarters at St. Paul, Minn., succeeding C. W. Cool, assigned to other duties.

D. E. Rossiter has been appointed trainmaster of the Chicago division of the Chicago, Milwaukee & St. Paul, with office at Chicago, in place of J. F. Anderson, who has been appointed trainmaster of the LaCrosse division, with headquarters at Milwaukee, Wis., succeeding W. B. Hinrichs, promoted. R. E. Sizer succeeds Mr. Rossiter as chief train despatcher of the Chicago division at Chicago.

J. E. Tussey, general manager of the Alabama, Tennessee & Northern, and the Tombigbee Valley, at Mobile, Ala., having resigned, that office will be abolished, effective September 30. All executive matters heretofore handled by the general manager will be handled by the president. P. A. Buck has been appointed superintendent of both companies, in charge of operation and maintenance, with headquarters at York, Ala., reporting to the president.

J. E. Spurrier, whose promotion to a position on the staff of the general manager of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been announced in these columns, began railway work as an extra operator on the Baltimore division of the Baltimore & Ohio in 1864, and worked his way up through various positions in the operating department of that road. In 1874, he became trainmaster of the Baltimore division, remaining in that position until 1886, when he was transferred to the Philadelphia division. He was promoted in 1894 to superintendent of the Baltimore division, and in 1902 was made superintendent of the Shenandoah division at Winchester, Va., of the same road, which position he held at the time of his recent appointment on the staff of the general manager, as above noted. Mr. Spurrier, in point of service, is one of the oldest officers of the Baltimore & Ohio.

George D. Brooke, who has been appointed superintendent of the Shenandoah division of the Baltimore & Ohio, with headquarters at Winchester, Va., as has been announced in these columns, entered the service of the Baltimore & Ohio in 1902, as a rodman in the engineering department, and later was levelman and transitman, until his appointment in May, 1904, as an assistant engineer. He was promoted to assistant division engineer in July, 1908, at Pittsburgh, Pa., and one year later was made division engineer of the same road at Baltimore, Md. In March, 1911, he became a special agent of the operating department of the Baltimore & Ohio, which position he held until February 1, 1912, when he was promoted to assistant superintendent of the Cumberland division with headquarters at Keyser, W. Va., and now becomes superintendent of the Shenandoah division of the same road, as above noted.

G. D. Brooke.

W. S. Tinsman, assistant to the president of the Chicago, Rock Island & Pacific, has been elected chairman of the General Managers' Association of Chicago and of the Association of Western Railways, succeeding W. A. Garrett, whose resignation to become vice-president of the Chicago Great Western, was announced last week. Mr. Tinsman was born September 8, 1867, at Berryville, N. Y. He graduated from the public schools in May, 1882, and began railway work in the same year with the Chicago, Rock Island & Pacific, and he has been in continuous service on that road. Until May, 1901, he was consecutively office boy for three years; telegraph operator from 1885 to 1888; train despatcher from March, 1888, to August, 1890; chief train despatcher for the next seven years, all at Trenton, Mo., and trainmaster at Horton, Kan., from October, 1897, to May, 1901. He was then made superintendent of terminals at Horton, and from May, 1902, to June, 1905, he was superintendent, first of the Oklahoma and later of the Missouri division. He was appointed general superintendent on the latter date, was assistant general manager for a year from April, 1907, and was then manager until December, 1909. In the latter month he was made general manager and held that title until February, 1912, first with jurisdiction over the lines east of the Missouri river, and from February, 1911, when the road was divided into three districts, he had jurisdiction over the First district, with office at Chicago. Since February, 1912, Mr. Tinsman has been assistant to the president of the Rock Island system.

W. S. Tinsman.

D. F. Milne, superintendent of car service of the Toledo, St. Louis & Western at Frankfort, Ind., has been appointed superintendent of transportation, with office at Frankfort. T. E. Conly has been appointed trainmaster, with jurisdiction over the First and Second subdivisions, extending from Frankfort to Toledo, Ohio, with office at Delphos, Ohio. F. M. Shonts has been made trainmaster of the Third and Fourth subdivisions, extending from Frankfort to St. Louis, with office at Charleston, Ill. The office of trainmaster at Frankfort, held by D. A. Klumph has been abolished.

Traffic Officers.

J. L. O'Brien, chief of the tariff bureau of the Michigan Central at Detroit, Mich., has resigned.

Edward S. King has been appointed a commercial freight agent of the Baltimore & Ohio, with headquarters at Norfolk, Va., a new agency. Effective October 1.

J. W. White has been appointed general agent of the Missouri, Kansas & Texas of Texas, with headquarters at Dallas, Tex., succeding Heber Page, resigned.

J. H. Wood, district passenger agent of the Southern Railway at Asheville, N. C., has been promoted to division passenger agent, with headquarters at Asheville, N. C., effective October 1.

A. A. McKowan, formerly chief clerk to the assistant freight and passenger agent of the St. Paul & Kansas City Short Line at Des Moines, Ia., has been appointed contracting freight agent of the Wabash at Des Moines, in place of H. D. Bellamy, resigned.

James Freeman, division passenger agent of the Southern Railway, at Atlanta, Ga., has been appointed assistant general passenger agent, with office at Birmingham, Ala. R. L. Baylor, division passenger agent, at Birmingham, succeeds Mr. Freeman, and M. Coxwell, city passenger and ticket agent at Birmingham, succeeds Mr. Baylor.

William G. Spangle, division freight agent of the Eastern and Western Pennsylvania and the Erie divisions, of the Pennsylvania Railroad at Altoona, Pa., has been appointed division freight agent of the Erie division, with headquarters at Williamsport, Pa., succeeding William E. Fraser, deceased. William G. Glynn, chief clerk to the coal freight agent at Philadelphia, succeeds Mr. Spangle.

H. F. Stanley, Jr., traveling freight agent of the Yazoo & Mississippi Valley at Natchez, Miss., has been appointed traveling freight agent of that road and the Illinois Central, with office at New Orleans, La., succeeding George E. Schneider, assigned to other duties. W. L. Jaquith, contracting freight agent at Vicksburg, Miss., succeeds Mr. Stanley, and the office of contracting freight agent at Vicksburg has been abolished. A. H. Davis has been appointed commercial agent of the Y. & M. V. at Vicksburg, Miss., succeeding A. L. Jaquith, deceased. H. H. Schutt has been appointed soliciting freight agent of the Illinois Central, with headquarters at Memphis, Tenn.

Engineering and Rolling Stock Officers.

G. H. Bussing, superintendent of motive power of the New Orleans Great Northern, at Bogalusa, La., having resigned to accept service elsewhere, that position has been abolished.

H. J. Osborne has been appointed master mechanic of the Louisiana division of the Rock Island Lines, with headquarters at Eldorado, Ark., succeeding W. F. Moran, transferred.

J. T. McGrath, superintendent rolling stock of the Chicago & Alton, with headquarters at Bloomington, Ill., has resigned, effective October 1, and will be succeeded by J. E. O'Hearne, master mechanic of the Wheeling & Lake Erie.

R. O. Rote, whose appointment as assistant chief engineer of the Lake Shore & Michigan Southern, with headquarters at Cleveland, Ohio, has been announced in these columns, was born March 22, 1871, at Geneva, Ohio. He began railway work in 1889 as rodman for the Michigan Central, and was successively instrument man, inspector and draftsman until 1892, when he became draftsman for the Lake Shore & Michigan Southern. In 1893 he was appointed chief draftsman of that road and was promoted to the position of second assistant engineer in 1899, which he held until January, 1905. On the latter date he was made principal assistant engineer, and on September 1 was appointed assistant chief engineer as above noted.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

THE NORFOLK & WESTERN is in the market for 20 mikado locomotives.

THE EAST CAROLINA has ordered 1 ten-wheel locomotive from the Baldwin Locomotive Works.

WORTH BROTHERS have ordered 1 six-wheel switching locomotive from the Baldwin Locomotive Works.

THE WOODWARD IRON COMPANY has ordered 2 mikado locomotives from the Baldwin Locomotive Works.

THE UNITED FRUIT COMPANY has ordered 3 ten-wheel locomotives from the Baldwin Locomotive Works.

THE JEFFERSON & NORTHWESTERN has ordered 1 ten-wheel locomotive from the Baldwin Locomotive Works.

THE AMERICAN TRADING COMPANY, New York, has ordered 2 mogul locomotives from the Baldwin Locomotive Works.

THE LEHIGH & NEW ENGLAND is in the market for 5 consolidation locomotives and 1 six-wheel switching locomotive.

THE PERE MARQUETTE is in the market for 35 mikado locomotives, 10 Pacific type locomotives and 5 six-wheel switching locomotives.

THE WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, Pittsburgh, Pa., has ordered 1 six-wheel switching locomotive from the Baldwin Locomotive Works.

THE AMERICAN RAILROAD COMPANY OF PORTO RICO. has ordered 1 ten-wheel switching locomotive and 1 six-wheel switching locomotive from the Baldwin Locomotive Works.

THE CANADIAN NORTHERN has ordered 30 ten-wheel locomotives from the Montreal Locomotive Works; and 25 consolidation locomotives and 20 switching locomotives from the Canadian Locomotive Company.

THE CANADIAN PACIFIC has ordered 75 mikado locomotives, 25 ten-wheel locomotives and 25 consolidation locomotives from the Montreal Locomotive Works, and 10 ten-wheel locomotives from the Canadian Locomotive Company.

THE CENTRAL NEW ENGLAND has ordered 3 eight-wheel switching locomotives from the American Locomotive Company. The dimensions of the cylinders will be 22 in. x 28 in.; the diameter of the driving wheels will be 51 in., and the total weight in working order will be 198,000 lbs.

CAR BUILDING.

THE MISSOURI, KANSAS & TEXAS is in the market for 23 passenger cars.

W. R. GRACE & Co., New York, have ordered 75 box and stock cars from the American Car & Foundry Company for the Central Railroad of Peru.

THE PENNSYLVANIA RAILROAD has ordered 22 all-steel, suburban coaches from the Pressed Steel Car Company, 22 all-steel, suburban coaches from the American Car & Foundry Company, and 20 all-steel through service, coaches from the Standard Steel Car Company.

SIGNALING.

New Installations of Block Signals, Interlocking, Telephones for Train Despatching, Etc.

Gollos' automatic train stop was noticed last week, page 548. A test of this apparatus was made on the Chicago Great Western, September 19, at which a number of signal engineers were present. About 60 runs were made, with an engine, caboose, and a number of cars, and in each case the train was brought to a stop in the proper manner. The inventor, Anatol Gollos, is a Russian engineer, residing at 308 East Fifty-fourth street, Chicago. He uses a shoe, attached to the tender of the locomotive, which is arranged to make contact with a short contact rail at the entrance of the block.

Supply Trade News.

E. C. Sherwood, New York, has for sale 20 overhauled, second hand, standard gage, 30-ton, box cars.

The Niles-Bement-Pond Company, New York, has opened a branch office at 336 West Fourth street, Cincinnati, Ohio. This office will be in charge of C. M. Pond.

The wages of the laborers of the Bethlehem Steel Company, South Bethlehem, Pa., have been increased from 13½ cents an hour to 14½ cents an hour. About 3,000 men will be affected by this change.

The Buffalo Brake Beam Company, New York, will open a branch office at Hamilton, Ont. A portion of the land occupied by the Hammant Steel Car Company has been leased, and the erection of temporary quarters is already under way. The business and staff of the branch office now located at Brantford, Ont., will be moved to Hamilton.

At a special meeting of the board of directors of the Cambria Steel Company, Johnstown, Pa., yesterday morning (September 26, 1912), W. H. Donner was elected president, succeeding C. S. Price, resigned. J. Leonard Replogle, since March, 1910, assistant to president of the company, was elected vice-president in charge of operation and sales.

The Western Electric Company, New York, has taken over the business of the Cleveland Electrical Supply Company, Cleveland, Ohio, and has opened a branch office at 724 Prospect avenue, Cleveland, the former address of the supply company. H. A. Speh, formerly in the Buffalo, N. Y., office of the Western Electric Company, has been made manager.

W. O. Jacquette, formerly vice-president of Manning, Maxwell & Moore, Inc., New York, has been made vice-president of the American Shop Equipment Company, Chicago, with office at 30 Church street, New York. The American Shop Equipment Company handles shop devices, including oil furnaces for welding, forging, melting and annealing.

The General Electric Company, Schenectady, N. Y., has sold to J. P. Morgan & Co., New York, $10,000,000 5 per cent. debenture bonds. These bonds are part of the authorized issue of $60,000,000, mentioned in the *Railway Age Gazette* of August 2, page 228. The proceeds of the sale of new issue are to be used, it is said, in strengthening the company's working capital.

The Pilliod Company, New York, during June, July and August, received orders for as much new business as during the entire fiscal year ended May 31, 1912. The additions to the plant at Swanton, Ohio, which were mentioned in the Daily edition of the *Railway Age Gazette* of June 12, page 1283, and which will increase the capacity of the plant by 66⅔ per cent., are now nearly completed.

The Strauss Bascule Bridge Company, Chicago, has been appointed designing engineer for the following bridges: A 65-ft. single leaf Strauss Bascule bridge at Camden, N. J.; an 82-ft. double leaf Strauss Bascule bridge at Port Huron, Mich.; an 85-ft. single leaf Strauss Bascule bridge across the Elizabeth river at Elizabeth, N. J.; two 175-ft. single leaf four-track Strauss Bascule bridges over Bronx Kills, for the New York Connecting Railroad, to be built as stationary spans with provisions for conversion into bascules later; a combined railway and highway bridge 3,000 ft. long across the Arkansas river at Pine Bluff, Ark., comprising one 245-ft. Strauss direct lift span, five 245-ft. stationary spans, any one of which can be converted into a lift span if desired, one 140-ft. fixed span, and 1,390-ft. of trestle approaches.

TRADE PUBLICATIONS.

Ditchers.—The T. W. Snow Construction Company, Chicago, has published an illustrated booklet on Railroad Ditchers and Graders. In addition to accounts of the efficiency of these ditchers this booklet includes an article entitled, Ditching with the Bowman Ditcher, which was published in the *Railway Age Gazette* of August 18, 1911.

Railway Construction.

New Incorporations, Surveys, Etc.

Algoma Central & Hudson Bay.—The Hawk Lake-Hobon section has been inspected by the government, and it is expected that it will be placed in operation at once. The main line from mile 68, to Hawk Lake Junction, Ont., will be completed this year; track laying has been finished and only a small amount of ballasting remains to be done. Work on an extension to a point north of the Canadian Pacific is now under way, and it is expected that a connection will be made with the Canadian Northern, at a point 50 miles north of the Canadian Pacific, before the coming winter. (April 15, p. 1014.)

All the work on the Algoma Eastern will be finished this year through Crean Hill to Little Current, with the exception of the swing bridge at Little Current. (December 1, p. 1148.)

Algoma Eastern.—See Algoma Central & Hudson Bay.

Ardmore Western Interurban.—Surveys are now being made, it is said, and contracts are to be let as soon as the surveys are completed. The company was organized to build from Ardmore, Okla., through Carter, Jackson and Love counties, via Springer, Woodford, Oil City, Cornish, Orr, Cheek and Brock, returning to the starting point at Ardmore, in all about 130 miles. J. S. Owen, is president; C. B. Hendricks, is vice-president, and D. W. Spooner, is chief engineer, Ardmore. (August 23, p. 366.)

Atchison, Topeka & Santa Fe.—An officer writes that construction work is now under way on the Dodge City & Cimarron Valley from Dodge City, Kan., southwest through the counties of Ford, Gray, Haskell, Grant, Stevens and Morton, 122 miles. Grading is finished on 60 miles, and track laid on 55 miles. A contract has recently been given to Ransom & Cook, Ottawa, Kan., for work on 62 miles in Grant, Stevens and Morton counties.

Athens & Tennessee River.—Incorporated in Tennessee to build a 26-mile line. T. A. Wright, Knoxville, is an incorporator.

Big Sandy & Kentucky.—Incorporated in Kentucky with $100,000 capital, and headquarters at Ashland. The plan calls for building from a point on the Chesapeake & Ohio, in Johnson county, through coal lands in Johnson, Magoffin and Breathitt counties, 31 miles. The incorporators include J. P. Adams, Columbus, Ohio; P. N. Fannin and W. H. Dawkins, Ashland, Ky., and G. D. Martin, Catlettsburg, Ky.

Birmingham, Ensley & Bessemer (Electric).—This company is being financed by Morris Brothers of Philadelphia, Pa. The first section, from Ensley, Ala., to the terminal station in Birmingham, has been opened for business. The line was built by MacArthur Bros., New York. It is expected that within three months operation will be extended on the east via Avondale and Woodlawn to East Lake, and early in 1913, that cars will be in operation over the line from Bessemer to East Lake, 23 miles. Morris Brothers, of Philadelphia, who own a majority of the stock, also own the Tuscaloosa Belt, which it is understood is to be electrified within a few months. It is said that valuable rights of way between Birmingham and Tuscaloosa on one end, and between Gadsden and Birmingham on the other, have been secured for new lines.

Bismarck, Bellevue Valley & Western.—Construction work is said to have been started on this line. The plans call for building from Bismarck, Mo., west via Caledonia, and Belelgrade to Sunlight, thence south via Lesterville and Centerville to West Fork, about 50 miles. E. E. Evans, Bismarck, is president, and H. Rohwer is chief engineer, 700 Fullerton building, St. Louis.

Burr's Ferry, Browndel & Chester.—See Southern Pacific.

Chesapeake & Ohio.—The report of this company for the year ended June 30, 1912, shows that an extensive yard and terminal has been completed during the year at Silver Grove, Ky., about 12 miles east of Cincinnati. Extensions of the Raleigh & Southwestern Coal River and Guyandotte Valley branch lines, aggregating 49½ miles, have been completed, also the construction of all second track authorized and the company

now owns two tracks, from tidewater at Newport News, Va., west to Cincinnati, Ohio, 655 miles, except on a section of nine miles in the mountains of West Virginia. During the year the company put in 12,475 tons of new rails, equal to 85½ track miles, which was used in renewal of existing main tracks.

CHICAGO & NORTH WESTERN.—The report of this company for the year ended June 30, 1912, shows that the elevation of the company's six main tracks on the Galena division through the village of Oak Park, adjoining the city of Chicago at its western limit, has been completed. The continuation of this elevation through the villages of River Forest and Forest Park, 1.43 miles, is also about completed, from the western limits of Oak Park to the overhead crossing of the Minneapolis, St. Paul & Sault Ste. Marie in River Forest, 0.8 miles. Work has been finished on an additional main track from Lake Shore Junction, Wis., to a connection with the Milwaukee, Sparta & North Western, north of Lindwerm, 4.16 miles. An aggregate of 124.74 miles of yard track, sidings and industrial spurs were also added during the year. The Milwaukee, Sparta & North Western, extending from near Lindwerm, Wis., on the Wisconsin division to Sparta on the Madison division, 169.85 miles, and from this line at a point about six miles west of Lindwerm to a connection with the Milwaukee and Madison line near West Allis, 8.63 miles, in all 178.48 has been taken over by the company, and to complete this line an additional main track is being built from Butler Junction, Wis., to Clyman, 35.38 miles. Important enlargements are being carried out at the Butler yard. The Des Plaines Valley, a double-track outer belt line, under construction from Proviso yard on the Galena division to a point on the Wisconsin division near Blodgett, Ill., 20.53 miles, has been finished from the Proviso yard to Wisconsin Division Junction, near Des Plaines, Ill., 10.50 miles, and will be completed between Wisconsin Division Junction and a point on the Wisconsin division near Blodgett in September, 1912. This line directly connects the several divisions of the Chicago & North Western, outside of the city of Chicago, with the new terminal yards at Proviso, about five miles west of the city limits. The St. Louis, Peoria & North Western is under construction from a point near Peoria, Ill., to a point near Girard, 90.6 miles. The right of way has been secured, and considerable progress has been made during the year on its construction.

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA.—The report of this company for the year ended June 30, 1912, shows that the extension from Black River Falls, Wis., to a connection with the main line at Levis, two miles, has been finished and is now in operation. A double-track line from Eau Claire, Wis., west, 3.18 miles, has been placed in operation. The second track between Merrillan, Wis., and Wyeville has also been placed in operation. Work has been started on a second track from a point 3.18 miles west of Eau Claire, Wis., to Northline, 62.66 miles. In connection with this work, changes in track are contemplated, which will shorten the line 1,668 ft., eliminate four curves, reduce the curvature 112 deg. 54 min., and change the maximum grade from 1 per cent. to one-half of 1 per cent. Work has also been started on change of line at Knapp, Wis.; at Woodville, at Elk Mound, and at Hersey, and on a change of line and grade at Red Cedar River. It is expected that the section east of Hersey, about 35.12 miles, will be ready for operation during the fall of 1912.

DES PLAINS VALLEY.—See Chicago & North Western.

DODGE CITY & CIMARRON VALLEY.—See Atchison, Topeka & Santa Fe.

EASTERN TEXAS TRACTION.—Construction work is to be started soon, it is said, on a line from Greenville, Tex., to Dallas, about 50 miles. J. W. Crotty and F. G. White, Dallas, are interested.

GETTYSBURG & HARRISBURG.—See Philadelphia & Reading.

GREAT NORTHERN.—According to press reports this company has let contracts for building about 160 miles in North Dakota and Montana. A contract has been given to H. A. Whittier, Northfield, Minn., to build from Mondak, Mont., south across the Missouri river to Sidney, about 28 miles. This line is to connect with the proposed line from the New Rockford-Willeston line, to be built through North Dakota via McKenzie county to Lewistown, Mont.

HAGERSTOWN, GREENCASTLE & MERCERSBURG (Electric).—Incorporated in Pennsylvania, it is said with $100,000 capital, to build between Mercersburg, Pa., and Hagerstown, Md., about 21 miles. The incorporators include J. D. Ensing, C. M. Hoffman and J. W. Wright. L. N. Downs, Hagerstown, may be addressed.

LOUISIANA ROADS.—According to press reports F. A. Ogden, of Houston, Tex., who owns a large tract of land south of Lake Charles, La., is said to be interested in a project to build a railway from Holmwood west to Orange, Tex., about 40 miles.

MILWAUKEE, SPARTA & NORTH WESTERN.—See Chicago & North Western.

MISSISSIPPI NORTHWESTERN.—An officer writes that the prospects of building this line are good, and contracts will be let as soon as the location is made. The plans call for a line from Pascagoula, Miss., northwest via Vicksburg, Malvern, Ark., and Bentonville, Carthage, Mo.; Fort Scott, Kan.; Topeka, Pawnee City, Neb.; Tecumseh and Weeping Waters to Omaha. Preliminary surveys are now being made on the Mississippi division. This will be the first section to be built. The company expects to develop a traffic in lumber, cotton, fruit, coal, livestock and packing house products. W. G. Seaver, president, New York and Pascagoula; J. W. Searles, chief engineer, Vicksburg, Miss.

MISSOURI PACIFIC.—The report of this company for the year ended June 30, 1912, shows that construction work on the line between Marianna, Ark., and West Memphis, which was started in March, 1903, and temporarily abandoned in December of that year, has been actively continued during the year. The line will be 43 miles long, and will pass through a large hardwood forest section. It provides a short low grade line to the south from Memphis. The track laying will be completed this fall. A two-mile line connecting the tracks of the St. Louis, Iron Mountain & Southern, with those of the Marion & Johnton City Railway in the Illinois coal district, was built during the year by the Johnston City Connecting Railway. Both of these companies are owned and operated by the St. Louis, Iron Mountain & Southern. The line was put in operation on July 1, and it will save a long and expensive detour in handling the coal traffic originating east of Herrin, Ill. During the year grade revision work was carried out between Atchison, Kan., and Padonia, and is now underway between Gorham, Ill., and Bush. Additional second tracks were laid on a total of 68½ miles. The State Line and Cypress yards, at Kansas City, Kan., were raised 1 to 6½ ft. to an elevation above high water line. The reconstruction of the yards at Jefferson City, Mo., were completed, and additional yard facilities installed at West Ivory, Mo.; Dupo, Ill.; Argenta and McGehee, Ark. Passings sidings, industrial sidings and spurs were constructed or extended, making a net addition in side track mileage of about 79.83 miles, during the year.

OHIO RIVER & NORTHERN.—Application has been made to the Public Service Commission of Ohio, it is said, for authority to issue $750,000 stock, and $2,000,000 bonds. The proceeds will be used for building a 31-mile line to connect the Pittsburgh & Lake Erie at Beaver, Pa., with the Erie Railroad at Niles, Ohio. The company was organized some years ago to build from Lorain, Ohio, southeast to Wellsville, and eventually to Pittsburgh, Pa. The original promoters included P. F. Smith, W. P. De Arnitt, Pittsburgh, and J. L. Francis, Chicago. Joseph Ramsey, Jr., Orange, N. J., was back of the project.

OREGON ROAD.—According to press reports, surveys are being made by E. J. Valjean, of Riverton, Oregon, for a line from Port Orford, north to Brandon, thence southeast via the Coquille valley, Grants Pass and the Rogue river valley to a connection with the Pacific & Eastern near Medford.

OTTAWA & ST. LAWRENCE ELECTRIC.—The rights and property of the North Lanark Railway and the Ottawa & St. Lawrence Electric have been taken over by J. A. Morden & Co., Toronto, Can., and the two companies have been amalgamated. Under the name of the Ottawa & St. Lawrence Electric, about 275 miles of railway is to be built from Ottawa, Ont., west along the south shore of the Ottawa river via Arnprior to Braeside, thence south via White Lake, Lanark, Perth and Athens to a point on the St. Lawrence river, six miles west of Brockville, thence east fol-

lowing the north shore of the St. Lawrence river to the boundary between the provinces of Ontario and Quebec. From Ottawa south a line is to be built via Metcalf, Vernon, Ormende, Winchester, and Winchester Springs to Morrisburg, where connection is to be made with the St. Lawrence river line. A four-mile branch from Kenmore east to Russell, and a branch from the Arnprior-Lanark line, which will cross the narrows of White Lake, is to be built west to High Falls on the Madawaska river, 20 miles. It is the intention of the company to build the section from Ottawa to Morrisburg, this fall, and to use gas-electric cars for operating the line.

PHILADELPHIA & READING.—An officer writes that the only work being done on the Gettysburg & Harrisburg at the present time, is the laying of several additional sidings to be used as passing sidings, aggregating about four miles.

ROME & ONEIDA (Electric).—Application has been made to the New York Public Service Commission, Second district, for permission to build an electric line, about 13 miles between Rome, N. Y., Westmoreland, Verona and Oneida. The company was incorporated in 1905, and was refused authority to build the line by the board of railway commissioners because its incorporation papers were defective. The legislature in 1911 passed an act validating the certificate. The commission will give a hearing on the application at Rome on October 3.

ST. LOUIS, PEORIA & NORTH WESTERN.—See Chicago & North Western.

ST. LOUIS & SAN FRANCISCO.—The San Benito & Rio Grande Valley, extending north and south of San Benito, Tex., 43½ miles, is finished and now in operation. About 22 miles are now under construction, north and south of Mission, Tex., and it is proposed to build an extension to connect these two sections.

SAN BENITO & RIO GRANDE VALLEY.—See St. Louis & San Francisco.

SEABOARD AIR LINE.—An officer writes that a contract has been given to the Vaughn Construction Company, Roanoke, Va., for grading work in connection with the passing tracks at Matthews, N. C., at Maxton, at Clarkton, and at Hermitage, Va.

SOUTHERN PACIFIC.—This company has bought the Burr's Ferry, Browndel & Chester, operating a line from Rockland, Tex., east to Turpentine, 10 miles. Work has been under way for some time on an extension from Turpentine east to Browndel, 19 miles. It is said, that the line will be extended east about 40 miles to a point on the Sabine river, and west from Rockland to a connection with the Houston, East & West Texas, about 40 miles.

SOUTHERN RAILWAY.—A contract has been given to the Callahan Construction Company, Knoxville, Tenn., for converting the 350-ft. tunnel between Nebula, Ga., and Pinedale on the Atlantic-Columbus line into an open cut. (August 23, p. 366.)

TUSCALOOSA BELT.—See Birmingham, Ensley & Bessemer.

UTAH COAL RAILWAY.—According to press reports a contract has been given to the Utah Construction Company to build from Mohrland, Emery county, Utah, to a point midway between Helper and Castle Gate, 23 miles. The contract calls for the completion of the grade and bridge work within 90 days. The company's plans call for a 90-mile line from Provo, Utah, via Springville and Huntington to Mohrland, where connection is to be made with the Castle Valley. The line will provide an outlet for coal from the mines of Carbon and Emery counties. W. M. Bradley, president; William Ashton, vice-president, and R. V. Harkness, secretary and treasurer. (March 15, p. 526.)

RAILWAY STRUCTURES.

BAY CITY MICH.—In connection with the terminal improvements of the Grand Trunk at Bay City, the company is putting up an addition to the station, at a cost of about $75,000. A freight shed, 34 ft. x 303 ft., to cost $20,000, is also being put up.

FAIRMONT, W. VA.—An officer of the Baltimore & Ohio writes that the contract for building the station at Fairmont has not yet been let. The work is temporarily held up pending a decision of residents of that place, as to the site for the new station. The plan calls for putting up a frame building with corrugated roof 300 ft. long x 30 ft. wide, to cost about $30,000.

KANSAS CITY, KAN.—The report of the Missouri Pacific for the year ended June 30, 1912, shows that improvements were completed on the double track steel bridge over the Kaw river at Kansas City, Kan., complying with the government requirements. The bridge was extended 196 ft., shifted transversely and raised 6½ ft. to provide additional waterway. During the year 1,296 lineal feet of other steel bridges, were constructed, replacing trestles or iron bridges, and 11,835 lineal feet of trestles were filled, replaced by culverts or partially filled. Grade crossings were eliminated by the construction or completion of overhead concrete and steel viaducts at Compton avenue, St. Louis, Mo.; Southern Boulevard and at South Main street, Independence, Mo.; Seventh street, Argenta, Ark.; Nineteenth street, Little Rock, and a subway at Second street, Argenta. During the year one new stone station was built, also four brick stations, 18 frame structures, and others were remodeled or extended at 20 points. A new 95-ft. brick, 27-stall engine house, with machine shop was built at Argenta, Ark. The extensive shop buildings were completed at Hoisington, Kan.; at Falls City, Neb., and at East Bottoms (Kansas City), Mo.

LONG ISLAND CITY, N. Y.—The Pennsylvania Railroad has plans made for putting up new rest houses at Sunnyside yard, Long Island City, at the Pennsylvania station in New York City, and at Waverly Transfer, N. J. A two-story brick building, 40 ft. x 66 ft. is to be built at Sunnyside yard. It will have a lunch room and kitchen on the first floor, and the second floor will be used for lockers and sleeping rooms. A two-story brick structure will be put up at the New York terminal. It will have lunch and locker rooms. A one-story building is to be built at Waverly Transfer.

NEW YORK.—See Long Island City.

OMAHA, NEB.—The report of the Chicago, St. Paul, Minneapolis & Omaha for the year ended June 30, 1912, shows that an engine house, a machine shop and oil house were built at Omaha, Neb., jointly with the Chicago & North Western, a station at Craig, Neb., and additions were made to the machine shop at St. Paul, Minn. Stations were also put up at Obert, Neb., at Spring Brook, Wis., and at Lake Wilson, Minn., and passenger stations at Black River Falls, Wis., and at Norfolk, Neb. Work was started grading north of Twentieth avenue, North, Minneapolis, Minn., for putting up a 30-stall engine house with turntable, heating plant, etc., connected with a building for machine shop, boiler room and coaling station. A concrete wall was built along the bluff between Cliff, Minn., and Mendota, 1,594 ft. The length of the wooden bridges were decreased 1,738 ft. by the construction of permanent bridges, 1,093 ft., and the construction of concrete pipe culverts, 645 ft.

PROVISO, ILL.—The report of the Chicago & North Western for the year ended June 30, 1912, shows that the terminal facilities at Proviso have been enlarged and improved by the construction of a 58-stall, 90-ft., brick engine house, a machine shop, a power house and other buildings, and that work on 33.2 miles of additional yard tracks is nearing completion. At Norfolk, Neb., a brick passenger station and eating house has been finished. At Boone, Ia., a 36-stall, 90-ft. brick engine house, a power house, a machine shop and miscellaneous buildings have also been completed, and there was added to the freight yard 11.46 miles of track. At the Chicago shop plant, a brick extension to the power house, 108 ft. x 30 ft., has been built, and at Milwaukee, Wis., work is now under way on a reinforced concrete grain elevator, to have a capacity of 500,000 bushels.

ST. LOUIS, MO.—The Manufacturers' Railway has received bids for an enginehouse and machine shop 80 x 390 ft., of concrete and steel construction.

SILVER GROVE, KY.—See Chesapeake & Ohio under Railway Construction.

WAVERLY TRANSFER, N. J.—See Long Island City.

LONGITUDINAL RAILWAY, CHILE.—The contractor of the Longitudinal Railway has been authorized by the department of industry to open to public traffic 14 miles of the northern section of the Longitudinal Railway north of Aguas Blancas station.

Railway Financial News.

BOSTON & MAINE.—Stockholders will vote on October 9 on the question of authorizing an issue of $10,063,700 common stock and $7,500,000 bonds. The proceeds of the sale of the stock will be used to refund money borrowed for the purchase of capital stock of the Worcester, Nashua & Rochester, the Maine Central, the Boston & Lowell, and the Concord & Montreal, and for other necessary purposes. The stockholders will also determine the price at which the stockholders shall be entitled to subscribe for the new stock, and in what proportion of their holdings of old stock. The proceeds of the bond sale will be used for new equipment, for eliminating grade crossings and for making permanent improvements to the road, for funding floating debts and for paying and refunding the $511,000 first mortgage bonds of the Worcester, Nashua & Rochester, maturing January 1, 1913.

BUFFALO, ROCHESTER & PITTSBURGH.—William A. Read & Company, New York, are offering $500,000 consolidated mortgage 4½ per cent. bonds, due May 1, 1957, at a price to yield 4.25 per cent. Of this issue $35,000,000 are authorized and $6,689,000 are outstanding.

CHICAGO & ALTON.—The stockholders on September 20 authorized an issue of $20,000,000 general mortgage 6 per cent. bonds. It is said that Kuhn, Loeb & Company, New York, have purchased in advance about $4,500,000. This is all that will be sold at present. The proceeds of the sale of these bonds will be used for new extensions, additions, improvements, etc. A part of the issue will be used for refunding certain outstanding obligations and for paying the floating debt.

CHICAGO & EASTERN ILLINOIS.—Kuhn, Loeb & Company, New York, have purchased and have resold $3,310,000 5 per cent. equipment certificates maturing in semi-annual instalments from March 1, 1913, to September 1, 1922. These certificates represent 90 per cent. of the cost of new equipment.

CHICAGO & WESTERN INDIANA.—J. P. Morgan & Company, New York, have bought the $10,000,000, three year, 5 per cent. notes due September 2, 1915. The proceeds of the sale of these notes will be used for the acquisition of the property of the Chicago Union Transfer, and for the enlargement of the Chicago terminal. These notes are secured by the mortgage under which $200,000,000 fifty-year bonds are authorized, the mortgage providing that the first $10,000,000 should be the notes now issued. See August 23, p. 367.

DENVER NORTHWESTERN & PACIFIC.—The new company, to be formed under the plan of reorganization, will be capitalized as follows: Capital stock, $10,000,000; authorized first mortgage thirty year 5 per cent. bonds, $35,000,000, of which approximately $7,000,000 are to be issued after foreclosure of the old mortgage; and second mortgage adjustment income bonds, $2,000,000. The $10,000,000 capital stock will be distributed to the Erb syndicate and the Denver Railway Securities Company, the latter receiving its portion as part consideration in settlement of its claims and judgments. The Erb syndicate will receive a bare majority of the stock. Of the authorized $35,000,000 first mortgage thirty-year 5 per cent. bonds, approximately $7,000,000 are to be distributed as follows: $4,117,640 to retire $8,000,000 of old bonds held as collateral to the notes of the Denver Railway Securities Company, and in addition a sum equal to the interest of $3,500,000 notes at the rate of 6 per cent., amounting to possibly $50,000; $1,500,000 to holders of half of the remaining $2,940,000 old first mortgage bonds in proportion of 50 per cent. of their par value and accrued interest; $200,000 to settle outstanding claims against the property; $1,132,000 for new money to be issued at 85 to the Erb syndicate which will provide approximately $962,000. Interest payments of these $7,000,000 bonds are to be graduated and adjusted for four years. The $2,000,000 second mortgage adjustment income bonds are to be distributed as follows: Approximately $600,000 to the holders of $2,940,000 old first mortgage bonds, for 20 per cent. of their par value and accrued interest; approximately $1,400,000 in full settlement of the claims and judgments of the Denver Railway Securities Company.

ELKHORN & SANDY VALLEY.—This road which taps the Consolidation Coal Company's extensive coal tract in the Elkhorn valley of Kentucky, has been finally completed, and will be turned over to the Baltimore & Ohio, which will operate the line on October 1.

ERIE.—The directors have authorized an issue of $4,000,000 equipment trust certificates to provide for equipment requirements for the last of this fiscal year and the first half of next. This will provide for equipment now under construction and to be ordered within the next twelve months.

GRAND TRUNK PACIFIC.—Sir Felix Schuster and Sir Henry White have been elected directors of this company. According to press reports this company has bought the White Pass & Yukon. This road runs from Skagway, Alaska, to White Horse, 140 miles.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—William A. Read & Company, New York, have sold $1,020,000 4½ per cent. equipment notes, series D, dated June 1, 1912, and due $51,000 semi-annually from December 1, 1912, to June 1, 1922.

NEW ORLEANS & NORTHEASTERN.—An annual dividend of 5 per cent. was paid on September 4 on the $6,000,000 common stock, comparing with 6½ per cent. paid in September, 1911, and in 1910.

NEW YORK, ONTARIO & WESTERN.—Lewis Cass Ledyard and R. D. Rickard have been elected directors succeeding Thomas P. Fowler, president of the company, who declined re-election, and the late James E. Childs.

NEW YORK, NEW HAVEN & HARTFORD.—Sidney W. Winslow has been elected a director of this company succeeding Amory Lawrence, deceased.

ST. LOUIS & SAN FRANCISCO.—William Salomon & Company, New York, and G. H. Walker & Company, St. Louis, Mo., have bought and are offering at par and interest the total issue of $2,600,000 two-year 6 per cent. secured notes, a direct obligation of the company, dated September 3, 1912, and due September 1, 1914. These notes will be secured by $3,609,046 New Orleans, Texas & Mexico 6 per cent. notes dated September 1, 1914; $2,000,000 full paid capital stock of the New Orleans, Texas & Mexico, being the entire outstanding stock of that company; $1,400,000 Kirby Lumber Company 7 per cent. preferred stock. There will also be pledged when $1,500,000 of the notes are issued and, in respect of the bonds, when authorized by the Texas railway commission: $600,000 San Benito & Rio Grande Valley first mortgage 6 per cent. bonds, and $49,100 full paid capital stock of the San Benito & Rio Grande Valley. There will also be pledged as further security all additional stock of the New Orleans, Texas & Mexico and the San Benito & Rio Grande Valley as issued, and all additional indebtedness of the New Orleans, Texas & Mexico, except its first mortgage bonds, and the indebtedness against which the first mortgage bonds will be issued.

ST. LOUIS, IRON MOUNTAIN & SOUTHERN.—According to press reports this company has bought the Sibley, Lake Bisteneau & Southern. This road runs from Sibley, La., to Camp Long, 28 miles.

SIBLEY, BISTENAU & SOUTHERN.—See St. Louis, Iron Mountain & Southern.

WHEELING & LAKE ERIE.—The New York Trust Company, trustee for the holders of $8,000,000 of the Wheeling & Lake Erie notes, secured by $12,000,000 bonds, has filed an application in the Federal Court in New York seeking to restrain their receiver from treating approximately $1,000,000 received on a judgment a year ago as stockholders' property, and asking that the money be applied to the payment of the bonds, which came due August 1, upon failure of the company to pay the notes. The $1,000,000 was awarded the stockholders in their suit for dissolution of a contract between the road and the Pittsburg, Wheeling & Lake Erie Coal Company.

WHITE PASS & YUKON.—See Grand Trunk Pacific.

CHILEAN RAILWAY CONSTRUCTION.—An appropriation has been made by the Chilean government to continue the construction of the Rancagua to Doñihue railway.

ANNUAL REPORTS

CHICAGO & NORTH WESTERN RAILWAY COMPANY—FIFTY-THIRD ANNUAL REPORT

REPORT OF THE BOARD OF DIRECTORS.

To the Stockholders of the Chicago and North Western Railway Company:

The Board of Directors submit herewith their report of the operations and affairs of the Chicago and North Western Railway Company for the fiscal year ending June 30, 1912.

Average number of miles operated, 7,858.87.

OPERATING REVENUES:		
Freight Revenue	$46,691,540.41	
Passenger Revenue	19,555,567.15	
Other Transportation Revenue	6,775,256.34	
Nontransportation Revenue	676,227.68	
Total Operating Revenues		$73,698,591.58
OPERATING EXPENSES (71.51 per cent. of Operating Revenues)		52,701,843.30
Net Operating Revenue		$20,996,748.28
OUTSIDE OPERATIONS—Net Deficit		33,038.59
Total Net Revenue		$20,963,709.69
TAXES ACCRUED (4.64 per cent. of Operating Revenues)		3,422,838.13
Operating Income		$17,540,871.56
OTHER INCOME:		
Rents—Credits	$165,790.30	
Dividends on Stocks Owned	1,844,722.00	
Interest on Funded Debt Owned	5,025.00	
Interest on Other Securities, Loans and Accounts, and Other Items	1,238,239.91	
Total Other Income		3,253,777.21
Gross Income		$20,794,648.77
DEDUCTIONS FROM GROSS INCOME:		
Rents—Debits	$1,194,791.02	
Interest Accrued on Funded Debt	8,043,839.90	
Other Interest	39,848.94	
Sinking Funds	38,000.00	
Other Deductions	10,838.31	
Total Deductions from Gross Income		9,327,318.17
Net Income		$11,467,330.60
DIVIDENDS:		
8% on Preferred Stock	$1,791,600.00	
7% on Common Stock	9,108,015.00	
Total Dividends on Stock		10,899,615.00
Balance Income for the year		$567,715.60

The results as compared with the preceding fiscal year were as follows:

Freight Revenue decreased		$2,333,417.58
Passenger Revenue increased	$436,683.48	
Other Transportation Revenue increased	463,881.42	
Nontransportation Revenue increased	213,258.43	
		1,113,823.33
Decrease in Total Operating Revenues		$1,219,594.25
Operating Expenses decreased	$310,866.89	
Taxes Accrued increased	306,804.29	
Decrease in Operating Expenses and Taxes Accrued	$4,062.60	
Net Deficit from Outside Operations decreased	20,638.37	
		24,700.97
Decrease in Operating Income		$1,194,893.28

The Operating Expenses for the current fiscal year include $30,350,692.09 paid for Labor as compared with $30,018,957.58 paid during the preceding fiscal year, being an increase of $331,734.51, accounted for as follows:

Increase account higher rates of compensation	$471,397.58
Decrease account less time worked by employes	139,663.07
	$331,734.51

MILES OF RAILROAD.

The total number of miles of railroad owned June 30, 1912, was ..... 7,744.85 miles

In addition to which the company operated:

THROUGH OWNERSHIP OF ENTIRE CAPITAL STOCK—		
Wolf River Valley Railway (Junction east of Elton to Van Ostrand, Wis.)	1.98 "	
UNDER LEASE—		
St. Paul Eastern Grand Trunk Railway (Clintonville to Oconto, Wis., and branches)	60.02 miles	
De Pue, Ladd & Eastern Railroad (Ladd to Seatonville, Ill.)	3.25 "	
Belle Fourche Valley Railway (Belle Fourche to Newell, S. D.)	23.52 "	
James River Valley and North Western Railway (Blunt to Gettysburg, S. D.)	39.55 "	
Des Plaines Valley Railway (Proviso Yard to Wisconsin Division Junction, Ill.)	10.50 "	
		136.84 "
UNDER TRACKAGE RIGHTS—		
Peoria & Pekin Union Railway (in the city of Peoria, Ill.)	2.02 "	
Chicago, Indiana & Southern Railroad (Churchill to Ladd, Ill.)	2.80 "	
Union Pacific Railroad (Broadway Station, Council Bluffs, Iowa, to South Omaha, Neb.)	8.73 "	
Missouri Valley and Blair Railway and Bridge Company's track	3.36 "	
Chicago, St. Paul, Minneapolis & Omaha Railway (Blair to Omaha, Neb.)	24.70 "	
Chicago, St. Paul, Minneapolis & Omaha Railway (Elroy to Wyeville, Wis.)	22.79 "	
Chicago, St. Paul, Minneapolis & Omaha Railway (in Sioux City, Iowa)	2.28 "	
Illinois Central Railroad (Sioux City to Wren, Iowa)	10.10 "	
		76.78 "
Total miles of railroad operated June 30, 1912	7,960.45 "	

The above mileage is located as follows:

In Illinois	695.52 miles
In Wisconsin	2,164.55 "
In Michigan	519.88 "
In Minnesota	650.30 "
In Iowa	1,620.26 "
In North Dakota	14.28 "
In South Dakota	1,063.15 "
In Nebraska	1,102.05 "
In Wyoming	130.46 "
Total	7,960.45 "

FREIGHT TRAFFIC.

The details of Freight Traffic for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Decrease Amount.	Decrease Per Cent.
FREIGHT REVENUE	$49,024,957.99	$46,691,540.41	$2,333,417.58	4.76

	1911.	1912.	Percentage of Increase or Decrease.
TONS OF FREIGHT CARRIED	36,733,526	37,265,642	1.45 Increase
TONS OF FREIGHT CARRIED ONE MILE	5,433,696,684	5,146,634,307	5.28 Decrease
AVERAGE REVENUE RECEIVED PER TON	$1.33	$1.25	6.02 Decrease
AVERAGE REVENUE RECEIVED PER TON PER MILE	.90 of a cent	.91 of a cent	1.11 Increase
AVERAGE DISTANCE EACH TON WAS HAULED	147.92 miles	138.11 miles	6.63 Decrease
MILEAGE OF REVENUE FREIGHT AND MIXED TRAINS	19,648,998	17,216,183	12.38 Decrease
AVERAGE NUMBER OF TONS OF REVENUE FREIGHT CARRIED PER TRAIN MILE			
East of Missouri River	300.27	324.36	8.02 Increase
West of Missouri River	133.48	136.93	2.58 Increase
Whole Road	276.54	298.94	8.10 Increase
AVERAGE NUMBER OF TONS OF REVENUE FREIGHT CARRIED PER LOADED CAR MILE	15.65	16.87	7.80 Increase
AVERAGE FREIGHT REVENUE PER TRAIN MILE	$2.50	$2.71	8.40 Increase

PASSENGER TRAFFIC.

The details of Passenger Traffic for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Increase Amount.	Increase Per Cent.
Passenger Revenue	$19,118,883.67	$19,555,567.15	$436,683.48	2.28

	1911.	1912.	Percentage of Increase or Decrease.
Passengers Carried	30,330,900	31,526,803	3.94 Increase
Passengers Carried One Mile	1,054,572,455	1,080,580,440	2.47 Increase
Average Fair Paid per Passenger	63 cents	62 cents	1.59 Decrease
Average Rate Paid per Passenger per Mile	1.81 cents	1.81 cents	.....
Average Distance Traveled per Passenger	34.77 miles	34.28 miles	1.41 Decrease
Mileage of Revenue Passenger and Mixed Trains	20,144,057	21,232,249	5.40 Increase
Average Passenger - Train Revenue per Train Mile	$1.20	$1.17	2.50 Decrease

MAINTENANCE OF WAY AND STRUCTURES.

The total Operating Expenses of the Company for the year ending June 30, 1912, were $52,701,843.30; of this amount $9,368,721.19 was for charges pertaining to the Maintenance of Way and Structures. Included in these charges is a large part of the cost of 47,168 tons of steel rails, the greater portion of which was laid in replacement of rails of lighter weight in 344.77 miles of track; also the cost of 2,168,273 new ties.

The charges for Maintenance of Way and Structures also include a large portion of the cost of ballasting 95.73 miles of track with crushed stone, 129.43 miles with gravel, and 19.88 miles with cinders; the erection, in place of wooden structures, of 35 new steel bridges on masonry, and 7 on pile supports, aggregating 4,018 feet in length and containing 2,494 tons of bridge metal; and the replacement of other wooden structures with masonry arch and box culverts and cast-iron pipes, the opening being filled with earth. The wooden structures replaced by permanent work aggregate 8,640 feet in length.

The charges on account of Maintenance of Way and Structures for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Increase or Decrease.
Cost of Rails:			
New steel rails	$1,149,889.91	$684,098.02	$465,791.89 Dec.
Usable and re-rolled rails.	386,659.53	517,029.13	130,369.60 Inc.
	$1,536,549.44	$1,201,127.15	$335,422.29 Dec.
Less value of old rails and other items	1,093,061.45	858,802.36	234,259.09 Dec.
Net charge for rails	$443,487.99	$342,324.79	$101,163.20 Dec.
Cost of Ties	1,285,538.95	1,089,639.61	195,899.34 Dec.
Cost of Ballast	183,677.18	270,889.41	87,212.23 Inc.
Cost of Other Track Material	415,725.36	332,143.11	83,582.25 Dec.
Roadway and Track Labor and Other Expenses	4,169,703.72	3,971,729.48	197,974.24 Dec.
Total Charges for Roadway and Track	$6,498,133.20	$6,006,726.40	$491,406.80 Dec.
Other Charges Account Maintenance of Way and Structures were as follows:			
Bridges, Trestles and Culverts	1,284,681.52	982,706.24	301,975.28 Dec.
Road Crossings, Fences, etc.	268,962.82	228,930.65	40,032.17 Dec.
Signals and Interlocking Plants	246,663.31	314,857.72	68,194.41 Inc.
Buildings, Fixtures and Grounds	986,104.39	977,028.80	9,075.59 Dec.
Docks and Wharves	68,556.21	130,497.71	61,941.50 Inc.
Superintendence	399,833.44	463,546.88	63,713.44 Inc.
Roadway Tools and Supplies.	75,157.02	92,885.00	17,727.98 Inc.
Sundry Miscellaneous Charges	174,140.01	171,541.79	2,598.22 Dec.
Total Charges Account Maintenance of Way and Structures	$10,002,231.92	$9,368,721.19	$633,510.73 Dec.

The above charges for Maintenance of Way and Structures for the current year amount to 17.78 per cent. of the total Operating Expenses, as compared with 18.87 per cent. for the preceding fiscal year.

MAINTENANCE OF EQUIPMENT.

The charges on account of Maintenance of Equipment for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Increase or Decrease.
Locomotives	$4,021,661.26	$4,167,982.40	$146,321.14 Inc.
Passenger-Train Cars	980,437.97	907,629.77	72,808.20 Dec.
Freight-Train Cars	3,684,541.12	3,764,638.33	80,097.21 Inc.
Work Equipment	107,056.90	99,451.93	7,604.97 Dec.
Shop Machinery and Tools.	201,271.48	241,971.21	40,699.73 Inc.
Superintendence	239,107.88	310,815.69	71,707.81 Inc.
Sundry Miscellaneous Charges	73,119.48	77,363.82	4,244.34 Inc.
Total Charges Account Maintenance of Equipment	$9,307,196.09	$9,569,853.15	$262,657.06 Inc.

The above charges for Maintenance of Equipment for the current year amount to 18.16 per cent. of the total Operating Expenses, as compared with 17.56 per cent. for the preceding fiscal year.

RESERVE FOR ACCRUED DEPRECIATION ON EQUIPMENT.

At the close of the preceding fiscal year there was a balance to the credit of the Equipment Reserve Accounts of $2,386,365.49

During the year ending June 30, 1912, there was credited to the Equipment Reserve Accounts on account of charges to Operating Expenses and Profit and Loss, and for salvage 2,287,477.45

$4,673,842.94

And there has been charged during the year against the above amount the original cost of Equipment retired and other items, as follows:

15 Locomotives	$125,506.00
8 Passenger-Train Cars	36,461.24
1,434 Freight-Train Cars	956,686.34
126 Work Equipment Cars	23,950.00
Other Items	155,377.14
	1,297,980.72

Leaving a balance to the credit of the Equipment Reserve Accounts on June 30, 1912, of $3,375,862.22

TRANSPORTATION EXPENSES.

The Transportation Expenses of the Company for the year ending June 30, 1912, were $30,924,938.30, or 58.68% of the total Operating Expenses. Of this amount $18,791,386.22, or 60.77%, was charged for labor; $7,661,267.62, or 24.77%, was charged for fuel for locomotives; and $4,472,284.46, or 14.46%, was charged for supplies and miscellaneous items. The increase in the Transportation Expenses for the year ending June 30, 1912, as compared with the preceding fiscal year, was $68,074.45, or .22%, distributed as follows:

Increase in amount charged for labor	$220,748.45
Decrease in amount charged for fuel for locomotives	302,654.49
Increase in amount charged for supplies and miscellaneous items	149,980.49
Net Increase	$68,074.45

CAPITAL STOCK.

There was no change during the year in the Capital Stock and Scrip of the Company other than the purchase by the Company of $110.00 Common Stock Scrip.

The Company's authorized Capital Stock is Two Hundred Million Dollars ($200,000,000.00), of which the following has been issued to June 30, 1912:

Common Stock and Scrip held by the Public.	$130,117,103.82	
Common Stock and Scrip owned by the Company	2,338,427.15	
Total Common Stock and Scrip		$132,455,530.97
Preferred Stock and Scrip held by the Public	$22,395,120.00	
Preferred Stock and Scrip owned by the Company	3,834.56	
Total Preferred Stock and Scrip		22,398,954.56
Total Capital Stock and Scrip, June 30, 1912		$154,854,485.53

FUNDED DEBT.

At the close of the preceding fiscal year the amount of Bonds held by the Public and in Sinking Funds was $169,214,000.00

The above amount has been decreased during the year ending June 30, 1912, as follows:

Bonds Redeemed with Sinking Fund Payments:

C. & N. W. Ry. Sinking Fund of 1879, 6%	$67,000.00
C. & N. W. Ry Sinking Fund of 1879, 5%	68,000.00
Total Bonds Redeemed	135,000.00

$169,079,000.00

And the above amount has been increased by Bonds assumed during the year, as follows:

Milwaukee, Sparta & North Western Railway First Mortgage	15,000,000.00
Total Bonds held by the Public and in Sinking Funds, June 30, 1912	$184,079,000.00
Net Increase during the year in Bonds held by the Public and in Sinking Funds	$14,865,000.00

BONDS IN THE TREASURY AND DUE FROM TRUSTEE.

At the close of the preceding fiscal year the amount of the Company's Bonds in its Treasury and due from Trustee was $5,248,000.00

The above amount has been increased during the year ending June 30, 1912, as follows:

C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee in Exchange for Bonds Retired, viz.:		
C. & N. W. Ry. Sinking Fund of 1879, 6%....	66,000.00	
C. & N. W. Ry. Sinking Fund of 1879, 5%....	67,000.00	
	$133,000.00	
C. & N. W. Ry. General Mortgage Gold Bonds of 1987, Due from Trustee on Account of Construction Expenditures Made During the Year	1,000,000.00	
		1,133,000.00
Total Bonds in the Treasury and due from Trustees, June 30, 1912		$6,381,000.00
Net Increase during the year in Bonds in the Treasury and due from Trustee		$1,133,000.00

CONSTRUCTION.

The construction charges for the year ending June 30, 1912, were as follows:

	Miles		
On Account of Additional Main Tracks, viz.:			
Second Track, Lake Shore Junction to north of Lindwerm, Wis.	4.16	$180,452.85	
Second Track near West Allis, Wis..	1.27	66,596.87	
			$247,049.72
On Account of Extension, viz.:			
Dallas to Winner, South Dakota....	21.50		34,290.68
On Account of Elevating Tracks, viz.:			
In the City of Evanston, Ill.....		$19,615.80	
North 46th Avenue to Austin Avenue, Chicago, Ill.		1,886.41	
Austin Avenue to Harlem Avenue, Oak Park, Ill.		354,680.57	
Harlem Avenue, Oak Park, Ill., to Des Plaines River		266,467.48	
South Branch Track, from near Taylor Street to Canal St., Chicago, Ill.....		24,683.34	
			667,333.60
Sundry Construction:			
Right of Way and Additional Depot and Yard Grounds .....Cr.		$60,462.75	
Station Buildings and Fixtures		34,220.58	
Shops, Enginehouses and Turntables		49,864.93	
Water and Fuel Stations		63,859.45	
Shop Machinery and Tools		111,593.40	
Bridges, Trestles and Culverts		710,196.41	
Interlocking and Signal Apparatus.....		98,915.76	
Telegraph and Telephone Lines.....		142,966.36	
New Sidings, Yard Tracks and Spurs to Industries		106,679.79	
Betterment of Roadway and Track		642,385.73	
Proviso, Ill., Terminal Improvements.....		413,214.14	
Boone, Iowa, Terminal Improvements		347,971.06	
New Chicago Passenger Terminal		189,406.28	
Miscellaneous Construction, including Road Crossings, Signs and other items.....		86,413.28	
			2,937,224.42
Equipment:*			
Equipment Retired .....Cr.		$1,297,980.72	
Equipment Acquired—41 Locomotives, 65 Passenger-Train Cars, and 26 Work Equipment Cars		1,219,587.27	
		Cr.	78,393.45
			$3,807,504.97
Account Cost of Milwaukee, Sparta and North Western Railway (incomplete)			14,506,058.41
Total			$18,313,563.38

*For equipment being acquired under the Equipment Trust of 1912 see page 19.

TRACK ELEVATION.

The elevation of the Company's six main tracks on the Galena Division through the Village of Oak Park, which adjoins the City of Chicago at its western limits, has been completed. The continuation of this elevation through the villages of River Forest and Forest Park, a distance of 1.43 miles, has been practically completed from the western limits of Oak Park to the overhead crossing of the Minneapolis, St. Paul and Sault Ste. Marie Railway in River Forest, a distance of .8 miles.

SUNDRY ADDITIONS AND BETTERMENTS.

Among the more important sundry additions and betterments to the property of the Company during the fiscal year are the following:

An additional main track from Lake Shore Junction, Wisconsin, to a connection with the Milwaukee, Sparta and North Western Railway north of Lindwerm, a distance of 4.16 miles, has been completed.

An aggregate of 124.74 miles of yard tracks, sidings and industrial spurs has been added.

At Norfolk, Nebraska, a modern brick passenger station and eating-house has been completed.

At Proviso, Illinois, the enlargement and improvement of the Company's terminal facilities by the construction of a 58-stall, 90-foot brick engine house, machine shop, power house, and other buildings, ample coal and water facilities, and 33.20 miles of additional yard tracks, is nearly completed.

At Boone, Iowa, the construction of a 36-stall, 90-foot brick engine-house, power-house, electric light and transmission line, machine-shop and miscellaneous buildings, has been completed. There has also been added to the freight yard at this station 11.46 miles of tracks.

At the Chicago Shop Plant, a brick extension to the power-house, 108 feet by 30 feet, has been made, which will provide space for four 250 H. P. boilers.

At Milwaukee, Wisconsin, a reinforced concrete, ten cylinder, grain elevator, having a total capacity of 500,000 bushels, is being constructed.

Automatic block signals are being installed between Harvard, Illinois, and Evansville, Wisconsin, a distance of 44 miles, and between Madison and Baraboo, Wisconsin, a distance of 38 miles. Upon completion of the work now under construction, 865.4 miles of the Company's main line will be protected by automatic signals.

A telephone line for use in dispatching trains has been completed during the year from Boone to Council Bluffs, Iowa, a distance of 148 miles, and a telephone line for like use is being installed from Chicago, Illinois, to Clinton, Iowa, a distance of 138 miles, which will provide a continuous telephone line from Chicago to Council Bluffs. Upon completion of this line the Company will have in operation 1,918 miles of telephone lines for use in dispatching trains.

NEW RAILWAYS AND EXTENSIONS.

The Milwaukee, Sparta and North Western Railway, a proprietary railway, to which reference was made in previous annual reports, extending from near Lindwerm on the Wisconsin Division, about eight miles north of Milwaukee, to Sparta on the Madison Division, a distance (including the railway acquired from the Princeton and Western Railway Company) of 169.85 miles, and from a connection with the above line at a point about six miles west of Lindwerm, to a connection with the Milwaukee and Madison line near West Allis, a distance of 8.63 miles, in all 178.48 miles, was purchased by this Company on April 1, 1912. In the completion of this railway an additional main track is being constructed from Butler Junction to Clyman, Wisconsin, a distance of 35.38 miles, and automatic block signals for both main tracks between these points are being installed; an important enlargement is being made to the Butler Yard, and three overhead viaducts to carry public highways over the Company's tracks are being constructed.

The Des Plaines Valley Railway, a double track outer belt railway, under construction in the interest of this Company, from the Proviso Yard on the Galena Division to a point on the Wisconsin Division near Blodgett, Ill., a distance of 20.53 miles, has been completed from the Proviso Yard to Wisconsin Division Junction near Des Plaines, Ill., a distance of 10.50 miles, and will be completed between Wisconsin Division Junction and a point on the Wisconsin Division near Blodgett on or about September 1, 1912. This railway directly connects the several divisions of the Chicago and North Western Railway, outside of the City of Chicago, with the new terminal yards at Proviso, about five miles west of the City limits, at which point connection is made with the Indiana Harbor Belt Railroad owning, or having trackage rights over, about 112 miles of Belt Railroad serving the important industrial territory in the vicinity of Indiana Harbor and Gary, Indiana. The Chicago and North Western Railway Company acquired an interest in the stock and certain obligations of the Indiana Harbor Belt Railroad during the preceding year. The completed portion of the Des Plaines Valley Railway is operated under lease by the Chicago and North Western Railway Company.

The St. Louis, Peoria and North Western Railway, to which reference was made in the last annual report, is under construction in the interest of this Company from near Peoria, to near Girard, Illinois, a distance of 90.6 miles. The right of way for this railway has been acquired and substantial progress has been made during the year in its construction. Near Girard the new railway will connect with the Macoupin County Railway, a proprietary railway extending from Girard to the Company's coal fields in Macoupin County, Illinois.

EQUIPMENT TRUST OF 1912.

To make provision for the acquisition of additional equipment, an agreement, sanctioned by the Board of Directors, was entered into on January 20, 1912, establishing the Chicago and North Western Railway Company Equipment Trust of 1912. The agreement provides for the acquisition of equipment by the Vendors named therein, its conveyance and delivery to The Farmers' Loan and Trust Company and Edwin S. Marston, Trustees, and the leasing thereof by this Company for a term of ten years. The Trust Company will thereupon issue Chicago and North Western Railway Company Equipment Trust Certificates to an amount not to exceed the cost of the equipment so delivered and leased, the total of which certificates shall not exceed $10,000,000.00. Upon compliance with the agreement and leases, in which provision is made for the retirement of the certificates during the terms of the leases, title to such equipment will become vested in this Company.

Contracts have been made by the Vendors for the following equipment to be delivered by September 1, 1912:

75 locomotives,
55 passenger cars,
3,000 box cars,
1,000 refrigerator cars,
600 furniture cars,
500 flat cars.

LANDS.

During the year ending June 30, 1912, 5,441.84 acres and 83 town lots of the Company's Land Grant lands have been sold for the total consideration of $144,764.35. The total number of acres remaining in the several Grants June 30, 1912, amounted to 369,595.45 acres, of which 29,369.97 acres were under contract for sale, leaving unsold 340,225.48 acres.

Appended hereto may be found statements, accounts and statistics relating to the business of the fiscal year, and the condition of the Company's affairs on June 30, 1912.

By order of the Board of Directors.

WILLIAM A. GARDNER,
President.

GENERAL BALANCE SHEET, JUNE 30, 1912.

(7,744.85 Miles.)

ASSETS.

PROPERTY INVESTMENT.		
Road and Equipment:—		
Balance to Debit of this Account, June 30, 1911	$306,303,101.38	
Add Sundry Construction and Equipment Expenditures for the year ending June 30, 1912, as see statement elsewhere herein	3,807,504.97	
" Account Cost of Milwaukee, Sparta and North Western Railway (incomplete)	14,506,058.41	
		$324,616,664.76
Securities—		
Securities of Proprietary, Affiliated and Controlled Companies—Unpledged		1,489,113.15
Other Investments—		
Advances to Proprietary, Affiliated and Controlled Companies for Construction, Equipment and Betterments	$15,177,454.18	
Miscellaneous Investments	1,031,101.39	16,208,555.57
		$342,314,333.48
WORKING ASSETS:		
Cash	$15,273,686.53	
Common Stock and Scrip, C. & N. W. Ry. Co., in hands of Treasurer	2,338,427.15	
Preferred Stock and Scrip, C. & N. W. Ry. Co., in hands of Treasurer	3,834.56	
$ 40,000 M. L. S. & W. Ry. Ext. & Imp. Sinking Fund Bonds on hand.	40,000.00	
5,910,000 C. & N. W. Ry. General Mortgage Gold Bonds of 1987, due from Trustee	5,910,000.00	
431,000 Southern Iowa Ry. First Mortgage Bonds on hand	431,000.00	
149,200 Shares of Capital Stock of the Chicago, St. Paul, Minneapolis & Omaha Ry. Co	10,337,152.29	
41,715 Shares of Preferred Stock of the Union Pacific Railroad Co	3,910,575.93	
Bills Receivable	511,931.77	
Traffic and Car-Service Balances Due from Other Companies	71,730.46	
Net Balance Due from Agents and Conductors	3,208,860.18	
Miscellaneous Accounts Receivable	2,372,162.10	
Materials and Supplies	4,473,324.18	
Other Working Assets	172,623.00	49,055,308.15
DEFERRED DEBIT ITEMS:		
Advances	$2,447,044.70	
Insurance Paid in Advance	43,305.94	
Cash and Securities in Sinking and Redemption Funds	3,989,029.61	
Other Deferred Debit Items	915,576.18	7,394,956.43
		$398,764,598.06

LIABILITIES.

CAPITAL STOCK:		
Common Stock and Scrip, C. & N. W. Ry. Co., held by the Public	$130,117,103.82	
Preferred Stock and Scrip, C. & N. W. Ry. Co., held by the Public	22,395,120.00	$152,512,223.82
Common Stock and Scrip, C. & N. W. Ry. Co., owned by the Company	$2,338,427.15	
Preferred Stock and Scrip, C. & N. W. Ry. Co., owned by the Company	3,834.56	2,342,261.71
Premium Realized on Capital Stock		29,657.75
		$154,884,143.28
MORTGAGE, BONDED AND SECURED DEBT:		
Bonds in hands of the Public	$171,324,500.00	
Add C. & N. W. Ry. Co. Sinking Fund Debentures of 1933, in hands of Public, issued for purchase of Stock of C. St. P. M. & O. Ry. Co.	9,695,000.00	
	$181,019,500.00	
Bonds held by Trustee account Sinking Funds	3,059,500.00	
Bonds owned by the Company and due from Trustee	6,381,000.00	190,460,000.00
WORKING LIABILITIES:		
Traffic and Car-Service Balances Due to Other Companies	$1,596,347.31	
Audited Vouchers and Wages Unpaid	4,630,032.17	
Miscellaneous Accounts Payable	226,038.35	
Matured Interest, Dividends and Rents Unpaid	3,110,150.04	
Other Working Liabilities	139,251.94	9,701,819.81
ACCRUED LIABILITIES NOT DUE:		
Unmatured Interest Payable	$1,861,420.84	
Taxes Accrued	60,000.00	1,921,420.84
DEFERRED CREDIT ITEMS:		
Reserve for Accrued Depreciation on Equipment	$3,375,862.22	
Other Deferred Credit Items	246,458.43	3,622,320.65
APPROPRIATED SURPLUS:		
Sinking Fund on Madison Extension Gold Bonds	$269,027.83	
" " " Menominee Extension Gold Bonds	112,270.47	
" " " North Western Union Ry. Gold Bonds	1,445,506.27	
" " " W. & St. P. R. R. Extension Gold Bonds	2,161,716.86	3,988,521.43
PROFIT AND LOSS		34,186,372.05
		$398,764,598.06

COMPARATIVE STATEMENT OF INCOME ACCOUNT.

	Year Ending June 30, 1911. Average Mileage Operated 7,718.72	Year Ending June 30, 1912. Average Mileage Operated 7,858.87	Increase or Decrease.
OPERATING REVENUES:			
Freight Revenue	$49,024,957.99	$46,691,540.41	—$2,333,417.58
Passenger Revenue	19,118,883.67	19,555,567.15	436,683.48
Other Transportation Revenue	6,311,374.92	6,775,256.34	463,881.42
Nontransportation Revenue.	462,969.25	676,227.68	213,258.43
Total Operating Revenues.	$74,918,185.83	$73,698,591.58	—$1,219,594.25
OPERATING EXPENSES	53,012,710.19	52,701,843.30	—310,866.89
Net Operating Revenue.	$21,905,475.64	$20,996,748.28	—$908,727.36
OUTSIDE OPERATIONS—NET Deficit	53,676.96	33,038.59	—20,638.37
Total Net Revenue	$21,851,798.68	$20,963,709.69	—$888,088.99
TAXES ACCRUED	3,116,033.84	3,422,838.13	306,804.29
Operating Income	$18,735,764.84	$17,540,871.56	—$1,194,893.28
OTHER INCOME:			
Rents—Credits	152,580.63	165,790.30	13,209.67
Dividends on Stocks Owned	1,711,222.00	1,844,722.00	133,500.00
Interest on Funded Debt Owned	4,087.50	5,025.00	937.50
Interest on Other Securities, Loans and Accounts, and Other Items	1,165,576.30	1,238,239.91	72,663.61
Total Other Income	$3,033,466.43	$3,253,777.21	$220,310.78
Gross Income	$21,769,231.27	$20,794,648.77	—$974,582.50
DEDUCTIONS FROM GROSS INCOME:			
Rents—Debits	1,200,022.70	1,194,791.02	—5,231.68
Interest Accrued on Funded Debt	7,726,146.35	8,043,839.90	317,693.55
Other Interest	1,360.97	39,848.94	38,487.97
Sinking Funds	225,000.00	38,000.00	—187,000.00
Other Deductions	13,601.24	10,838.31	—2,762.93
Total Deductions from Gross Income	$9,166,131.26	$9,327,318.17	$161,186.91
Net Income	$12,603,100.01	$11,467,330.60	—$1,135,769.41
DIVIDENDS:			
8% on Preferred Stock	1,791,600.00	1,791,600.00	.....
7% on Common Stock	9,108,015.00	9,108,015.00	.....
Total Dividends on Stock.	$10,899,615.00	$10,899,615.00	.....
Balance Income for the year, carried to Profit and Loss	$1,703,485.01	$567,715.60	—$1,135,769.41

PROFIT AND LOSS ACCOUNT, JUNE 30, 1912.

DR.		CR.	
Depreciation accrued prior to July 1, 1907, on equipment retired or changed from one class to another during the current fiscal year	$796,905.71	Balance, June 30, 1911	$33,066,463.22
Discount on Milwaukee, Sparta and North Western Railway First Mortgage Bonds sold during the year	1,125,000.00	Balance Income for Year ending June 30, 1912, brought forward from Income Account	567,715.60
Net loss on property sold or abandoned and not replaced	362,560.10	Amount transferred from "Appropriated Surplus" on account of the retirement of Madison Extension and Menominee Extension First Mortgage Sinking Fund Bonds and C. & N. W. Ry. Sinking Fund Bonds of 1879	2,923,450.11
Adjustments in sundry accounts, etc	86,791.07		
Balance Credit, June 30, 1912, carried to Balance Sheet	34,186,372.05		
	$36,557,628.93		$36,557,628.93

THE CHESAPEAKE & OHIO RAILWAY COMPANY—THIRTY-FOURTH ANNUAL REPORT.

RICHMOND, Va., September 12, 1912.

TO THE STOCKHOLDERS:

The Thirty-fourth Annual Report of the Board of Directors, for the fiscal year ended June 30, 1912, is herewith submitted.

The average mileage operated during the year by The Chesapeake and Ohio Lines was 2,263.1 miles, an increase over the previous year of 33.9 miles. The mileage at the end of the year was 2,305.5 miles, an increase of 63.9 miles over mileage on June 30, 1911. See schedule on page 12.

The operations of the Chicago Line (The Chesapeake and Ohio Railway Company of Indiana) are included in this report. This line has not yet begun to yield any return to your Company upon the sums invested in the purchase of its stock and bonds. This is due in part to its physical condition at the time it was acquired and to the consequent necessity for steady improvement and excessive maintenance work coupled with the necessity for expediting through traffic in order that the business offered your Company might be handled. Careful measures have been undertaken for bringing this line to a much higher state of efficiency and the outlook upon its future earnings appears more favorable now than at any time since its acquisition.

RESULTS FOR THE YEAR.

Operating Revenues were		$34,289,869.77
(Increase $1,706,458.53, or 5.24%.)		
Operating Expenses were		22,635,681.04
(Increase $842,066.02, or 3.86%.)		
Net Operating Revenue was		$11,654,188.73
(Increase $864,392.51, or 8.01%.)		
Taxes were		1,014,219.94
(Decrease $51,633.19, or 4.84%.)		
Operating Income, Taxes deducted, was		$10,639.968.79
(Increase $916,025.70, or 9.42%.)		
Miscellaneous Income was		1,808,562.90
(Increase $247,748.17, or 15.87%.)		
		$12,448,531.69
Rentals and Other Payments were		832,019.17
(Decrease $334,906.17, or 28.70%.)		
Income for the year available for interest was		$11,616,512.52
(Increase $1,498,680.04, or 14.81%.)		
Interest (63.21% of amount available) amounted to		7,342,306.49
(Increase $452,758.84, or 6.57%.)		
Net Income for the year, euivalent to 6.81% on capital stock outstanding, amounted to		$4,274,206.03
(Increase $1,045,921.20, or 32.40%.)		
Dividends paid during the year: Four dividends of 1¼% each, aggregating		3,139,627.50
Remainder, devoted to improvement of physical and other assets		$1,134,578.53

FINANCIAL.

The outstanding capital stock was reduced during the year through the conversion of $200 par value of First Preferred Stock into Common Stock. The changes in funded debt in the hands of the public during the year were as follows:

	Increase.	Decrease.
4½ per cent. Secured Gold Notes	$3,500,000.00	
4½ per cent. General Mortgage Bonds	374,000.00	
4 per cent. Greenbrier Ry. Co. First Mortgage Bonds		$23,000.00
Equipment Trust Obligations		2,118,671.34
Total	$3,874,000.00	$2,141,671.34
Net increase	$1,732,328.66	

Other changes in funded debt shown on the balance sheet of June 30, 1912, were:

	Increase.	Decrease.
5 Per cent. First Lien and Improvement Mortgage Bonds	$22,468,000.00	
4 per cent. Raleigh and Southwestern Ry. Co. First Mortgage Bonds	144,000.00	
4 per cent. Coal River Ry. Co. First Mortgage Bonds	78,000.00	
4 per cent. Big Sandy Ry. Co. First Mortgage Bonds	6,000.00	
5 per cent. General Funding and Improvement Bonds		$6,787,000.00
Equipment Trust Notes of November 18, 1909.		2,170,000.00

None of the First Lien and Improvement Mortgage Bonds issued during the year have been sold, all of them, with the exception of a small amount in the Company's treasury, having been deposited as collateral for $19,500,000 of outstanding 4½ per cent. Secured Gold Notes. These bonds were issued during the year and were authenticated and delivered in respect of the acquisition of certain stocks and bonds, for the payment of certain equipment obligations, and $5,000,000, face amount, for additions and betterments.

The 4½ per cent. Secured Gold Notes issued during the year were sold to provide funds for new equipment and other additions and betterments; the 4½ per cent. General Mortgage Bonds were issued for the building of additional second track; and the Raleigh and Southwestern, Coal River and Big Sandy Railway Company First Mortgage Bonds issued during the year were acquired by your Company in reimbursement for capital expenditures made for account of those branch lines and remain in your Company's treasury. The decrease in the amount of 5 per cent. General Funding and Improvement Mortgage Bonds outstanding is due to the pledge of that face amount of bonds acquired by your Company two years ago, against which a like amount of First Lien and Improvement Mortgage Bonds have been issued; and other decreases shown above in amounts of outstanding bonds are due to retirement through sinking funds.

Your Company has acquired during the year additional shares of stock of The Chesapeake and Ohio Equipment Corporation, the First National Bank Building Corporation (Richmond, Va.), and of White Sulphur Springs, Incorporated. It has also acquired all the stock of the Logan and Southern Railway Company and of the Silver Grove Land and Building Company, and notes of The Chesapeake and Ohio Equipment Corporation were acquired and pledged under your Company's First Lien and Improvement Mortgage. Further shares of stock and first mortgage bonds of The Chesapeake and Ohio Railway Company of Indiana were issued in respect to the cost of certain additions and betterments made to that line and were pledged under your Company's First Lien and Improvement Mortgage.

A statement of charges to property accounts will be found on page 16, by referring to which it will be seen that additions and betterments were made to the amount of $3,710,498.92, of which $3,550,035.75 was added to cost of road and $160,463.17 to cost of equipment. The Chesapeake and Ohio Equipment Corporation issued $20,000 additional stock and $1,750,000 additional notes for purchase of new equipment, all of which was acquired by your Company at par, $5,910,000 face amount of similar notes having been acquired in July, 1911, out of the proceeds of the sale of securities in the previous fiscal year. The total property investment pertaining to the fiscal year was therefore $5,480,498.92.

A schedule of securities owned June 30, 1912, will be found on page 17.

During the past three years your Company's increase in capital liabilities in hands of the public, its principal acquisition of stocks and bonds of other companies, and its expenditures for branch line construction, equipment, and other additions and betterments have been as follows:

	Par Value.		
CAPITAL OBLIGATIONS ISSUED OR ASSUMED:			
General Mortgage 4½% Bonds.	$3,716,000.00		
First Consolidated Mortgage 5% Bonds	2,000,000.00		
Convertible 4½% Debentures	31,390,000.00		
Three Year 4½% Collateral Trust Notes	19,500,000.00		
Coal River Railway Co. First Mortgage 4% Bonds	2,310,000.00		
Raleigh and Southwestern Railway Co. First Mortgage 4% Bonds	350,000.00		
	$59,266,000.00		
Realizing		$55,851,735.00	
Less:			
CAPITAL OBLIGATIONS PAID OR PURCHASED:			
Peninsula Division First Mortgage 6% Bonds maturing January 1, 1911	$2,000,000.00		
Greenbrier and New River Railroad Co. First Mortgage 5% Bonds redeemed February 1, 1911	339,000.00		
General Funding and Improvement Mortgage 5% Bonds	6,787,000.00		
Greenbrier Railway Company First Mortgage 4% Bonds retired November 1, 1911	2,000.00		
Equipment Trust Payments	6,140,000.00		
Through Sinking Funds:			
Big Sandy Railway Co. First Mortgage 4% Bonds	157,000.00		
Coal River Railway Co. First Mortgage 4% Bonds	56,000.00		
Greenbrier Railway Co. First Mortgage 4% Bonds	60,000.00		
Raleigh and Southwestern Railway Co. First Mortgage 4% Bonds	6,000.00		
	$15,547,000.00		
Costing		15,857,801.25	
			$39,993,933.75
ACQUISITIONS:			
Stocks of:			
The C. & O. Railway Co. of Indiana	$5,131,500.00		
First National Bank Building Corporation (Richmond, Va.)	180,000.00		
The Hocking Valley Railway Co.	7,671,800.00		
The Kanawha and Michigan Railway Co.	4,029,600.00		
Kanawha Bridge and Terminal Co.	400,000.00		
Logan and Southern Railway Co.	82,800.00		
Levisa River Railroad Co. (of Ky.)	50,000.00		
The Levisa River Railroad Co. (of Va.)	50,000.00		
Silver Grove Land and Building Co.	111,000.00		
White Sulphur Springs, Incorporated	769,400.00		
Miscellaneous	6,000.00		
	$18,482,100.00		
Costing		$18,742,134.39	
Bonds of:			
The C. & O. Railway Co. of Indiana First Mortgage 5%	$6,208,000.00		
Costing		4,966,900.00	
Properties of:			
Coal River Railway Co.	$2,304,359.88		
Raleigh and Southwestern Railway Co.	816,562.42		
Costing		3,120,922.30	
Construction of:			
Extensions of Branch Lines, costing	$1,362,008.79		
Miscellaneous Additions and Betterments, costing (Excluding $1,268,260.89 expended on Chicago Line to April 30, 1912, for which securities have been acquired.)	10,526,182.88	11,888,191.67	
Equipment:			
Additional equipment acquired (less retirals) (Excluding $51,140.91 expended on Chicago Line to April 30, 1912, for which securities have been acquired.)	$2,161,067.24		
Securities of The Chesapeake and Ohio Equipment Corporation acquired at par:			
Stock	1,370,000.00		
Notes	7,660,000.00		
	$9,030,000.00	11,191,067.24	
			$49,909,215.60

GENERAL REMARKS.

The equipment inventory as of June 30, 1912, was as follows:

Locomotives owned	538	Inc.	33
Locomotives leased	255	Dec.	20
Total	793	Inc.	13
Passenger train cars owned	344	Inc.	12
Passenger train cars leased	29	Inc.	19
Total	373	Inc.	31
Freight train and miscellaneous cars owned	19,540	Inc.	1,142
Freight train cars leased	25,265	Inc.	795
Total	44,805	Inc.	1,937

The changes during the year in the reserve for accrued depreciation of equipment are as follows:

Balance to credit of account June 30, 1911		$2,075,866.17
Amount credited during year ended June 30, 1912, by charges to:		
Operating expenses	$729,247.20	
Outside operations expenses	16,472.72	
	$745,719.92	
Charges to account for:		
Accrued depreciation on equipment retired during years—15 locomotives, 358 freight and work cars and 2 car floats	$29,983.10	
Accrued depreciation on cars changed in class during year	1,322.68	
	$31,305.78	
		714,414.14
Balance to credit of account June 30, 1912		$2,790,280.31

Despite the remarkable severity of the winter and the increased work which resulted, the operating ratio of your Company has decreased, and the revenues, ton miles and efficiency have increased, as an examination of the following table of facts will show:

	1912.	1911.	Increase.
Operating revenues	$34,289,869.77	$32,583,411.24	$1,706,458.53
Net operating revenue	11,654,188.73	10,789,796.22	864,392.51
Operating ratio	66.0%	66.9%	0.9%*
Second track mileage	477.3	420.4	56.9
Tons of revenue freight carried one mile	6,692,114,437	6,082,682,596	609,431,841
Revenue train load, tons	756	656	100
Revenue tons per loaded car	30.3	29.2	1.1

*—Decrease.

An extensive yard and terminals have been completed during the year at Silver Grove, Kentucky, about 12 miles east of Cincinnati, at a total cost of $919,373.66. The increased facilities thus afforded for the handling of your Company's traffic over the Cincinnati Division has been much needed owing to the rapid increase in coal tonnage moved westward and should lead to further economies of operation. Yards and terminals at Summit, Ohio, and Boston, Indiana, on the Chicago Line have also been completed and put in operation at a total cost of $701,304.79.

Extensions of the Raleigh and Southwestern, Coal River and Guyandot Valley branch lines aggregating 49.5 miles have been completed. The Island Creek Railroad, 6.6 miles, has been leased and the Logan and Southern Railway, 1.2 miles, has been acquired. The construction of all second track authorized has been completed and your Company now owns two tracks from tidewater at Newport News, Virginia, to Cincinnati, Ohio, a distance of 655 miles, except 9 miles in the mountains of West Virginia.

The coal and coke tonnage was 18,081,677, an increase of 12.3 per cent.; other freight tonnage was 8,066,226, a decrease of 5.2 per cent. Total tonnage was 26,147,903 tons, an increase of 6.3 per cent. Freight revenue was $27,261,474.53, an increase of 6.5 per cent. Freight train mileage was 8,846,617 miles, a decrease of 4.6 per cent. Revenue ton miles were 6,692,114,437, an increase of 10 per cent. Ton mile revenue was 4.07 mills, a decrease of 3.3 per cent. Revenue per freight train mile was $3.082, an increase of 11.7 per cent. Revenue tonnage per train mile was 756 tons, an increase of 15.2 per cent.; including Company's freight, the tonnage per train mile was 788 tons, an increase of 14.4 per cent. Tonnage per locomotive including Company's freight was 684 tons, an increase of 10.1 per cent. Revenue tonnage per loaded car was 30.3 tons, an increase of 3.8 per cent. Tons of revenue freight carried one mile per mile of road were 2,957,056, an increase of 8.4 per cent.

There were 5,489,040 passengers carried, a decrease of 2.3 per cent. The number carried one mile was 252,397,519, a decrease of 0.3 per cent. Passenger revenue was $5,505,536.22, a decrease of 0.1 per cent. Revenue per passenger per mile was 2.181 cents, an increase of 0.2 per cent. Number of passengers carried one mile per mile of road was 111,527, a decrease of 1.8 per cent. Passenger train mileage was 5,104,754, an increase of 4.7 per cent. Passenger revenue per train mile was $1.079, a decrease of 4.5 per cent.; including mail and express it was $1.266, a decrease of 3.9 per cent.; passenger service train revenue per train mile was $1.299, a decrease of 4.0 per cent.

There were 12.475 tons of new rails (3,956 tons 100 pounds and 8,519 tons of 90 pounds) equal to 85.5 track miles, used in the renewal of existing main tracks.

The average amount expended for repairs per locomotive operated was $2,700.29; per passenger train car $839.24; per freight train car $65.33.

Mr. Edwin Hawley, a director of your Company, died on February 1, 1912. He had for several years exerted a powerful influence in behalf of your interests and his connection with them has been commemorated by his associates in the resolution preceding this report.

General Thos. H. Hubbard was elected a director at the annual meeting on October 24, 1911, in place of Mr. Frederic W. Scott, resigned. Mr. Frank H. Davis was elected a director and a member of the Executive Committee on February 15, 1912, in place of Mr. Hawley. Mr. H. E. Huntington was elected a member of the Executive Committee on February 15, 1912, in place of Mr. T. P. Shonts, resigned.

On November 1, 1911, Mr. M. J. Caples was appointed Fourth Vice-President with supervision over the operating and construction departments.

Appreciative acknowledgment is hereby made of efficient services during the year of officers and employees.

By order of the Board of Directors.

GEO. W. STEVENS, *President.*

FRANK TRUMBULL, *Chairman.*

THE CHESAPEAKE AND OHIO LINES.

GENERAL INCOME ACCOUNT.

For Yea ended June 30, 1912, and Comparison with Year ended June 30, 1911.

TABLE 2.

	1912.	1911.	Increase or Decrease.
OPERATING REVENUES.			
From Freight Traffic	$27,261,474.53	$25,590,026.83	$1,671,447.70
" Passenger Traffic	5,505,536.22	5,512,931.94	—7,395.72
" Transportation of Mails	371,137.09	371,338.32	—201.23
" Transportation of Express	586,021.42	536,907.79	49,113.63
" Other Transportation	323,569.13	339,109.92	—15,540.79
" Non-Transportation	242,131.38	233,096.44	9,034.94
Total Operating Revenues	$34,289,869.77	$32,583,411.24	$1,706,458.53
OPERATING EXPENSES.			
For Maintenance of Way and Structures	$3,981,645.67	$4,141,571.67	—$159,926.00
" Maintenance of Equipment	6,724,459.75	6,198,825.27	525,634.48
" Traffic	636,966.92	615,338.27	21,628.65
" Transportation	10,503,415.25	10,044,172.98	459,242.27
" General	789,193.45	793,706.83	—4,513.38
Total Operating Expenses	$22,635,681.04	$21,793,615.02	$842,066.02
	66.0%	66.9%	—0.9%
Net Operating Revenue	11,654,188.73	10,789,796.22	864,392.51
INCOME FROM OTHER SOURCES:			
Hire of Equipment	$411,391.54	$279,447.92	$131,943.62
Interest from Investments	1,083,225.91	954,403.62	128,822.29
Interest, General Account	49,159.61	46,886.22	273.39
Sundry Items	264,785.84	280,076.97	—15,291.13
	$1,808,562.90	$1,560,814.73	$247.748.17
Gross Income	$13,462,751.63	$12,350,610.95	$1,112,140.68
DEDUCTIONS FROM INCOME:			
Interest on Funded Debt	$7,045,261.67	$6,506,896.21	$538,365.46
Interest on Equipment Trusts	297,044.82	382,651.44	—85,606.62
Taxes	1,014,219.94	1,065,853.13	—61,633.19
Rentals Leased Roads, Joint Tracks, &c.	775,364.55	816,816.72	—41,452.17
Rental of Leased Equipment	.....	246,560.00	—246,560.00
Loss on C. & O. Grain Elevator	56,654.62	55,448.62	1,206.00
Other Deductions	.....	48,100.00	—48,100.00
Total deductions	$9,188,545.60	$9,122,326.12	$66,219.48
NET INCOME	4,274,206.03	3,228,284.83	1,045,921.20
Amount to credit of Profit and Loss June 30, 1911			$1,711,100.41
Amount of Net Income for year ended June 30, 1912, transferred to Profit and Loss			4,274,206.03
			$5,985,306.44
Deduct:			
Dividend No. 20 of 1¼% paid September 30, 1911			$784,906.25
Dividend No. 21 of 1¼% paid December 30, 1911			784,906.25
Dividend No. 22 of 1¼% paid March 30, 1912			784,907.50
Dividend No. 23 of 1¼% paid June 29, 1912			784,907.50
			$3,139,627.50
			$2,845,678.94
Discount on Secured Gold Notes sold during year, and sundry adjustments			85,280.45
Balance to credit of Profit and Loss June 30, 1912			$2,760,398.49

THE CHESAPEAKE AND OHIO LINES.

CONDENSED BALANCE SHEET, JUNE 30, 1912.

ASSETS.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana.)

TABLE 3.

PROPERTY INVESTMENT.			
Cost of Road	$165,183,304.04		
Cost of Equipment	33,204,770.06		
		$198,388,074.10	
Reserve for Accrued Depreciation of Equipment—Cr.		2,790,280.31	
			$195,597,793.79
SECURITIES OF PROPRIETARY, AFFILIATED AND CONTROLLED COMPANIES—PLEDGED.			
Stocks—See Schedule, page 18	$15,228,001.12		
Bonds—See Schedule, page 18	10,739,407.01		
	$25,967,408.13		
SECURITIES—ISSUED OR ASSUMED—PLEDGED.			
First Lien and Improvement Mortgage 5% Bonds (see Contra)	22,300,000.00		
		48,267,408.13	
MISCELLANEOUS INVESTMENTS.			
Physical Property		150,607.17	
SPECIAL FUNDS, AND FUNDED DEBT ISSUED AND RESERVED—			
Potts Creek Branch—Cash.	$39,865.71		
Raleigh and Southwestern Railway Bonds authenticated in advance of construction	40,000.00		
		79,865.71	
			48,497,881.01
			$244,095,674.80
WORKING ASSETS.			
Cash in Treasury	$1,007,448.74		
Cash in Transit	949,414.24		
Cash deposits to pay Interest and Dividends	1,009,512.40		

WORKING ASSETS—Continued.			
Cash deposits to pay Equipment Trust Principal....	112,000.00		
Cash deposits to pay Matured Bonds and Equipment Notes	14,174.17		
Loans and Bills Receivable	303,344.26		
Traffic Balances	712,913.98		
Agents and Conductors....	857,761.62		
Miscellaneous Accounts Receivable	664,361.36		
Other Working Assets.....	30,306.10		
		$5,661,236.87	
Materials and Supplies....		3,094,578.82	
SECURITIES IN TREASURY—			
UNPLEDGED.			
Stocks—See Schedule, page 17	$2,632,032.92		
Bonds—See Schedule, page 17	1,526,901.00		
		4,158,933.92	
DEFERRED ASSETS.			
Unmatured Interest and Dividends	$13,595.43		
Advances to Proprietary, Affiliated and Controlled Companies	143,469.09		
Advances, Working Funds (Fast Freight Lines, etc.)	36,593.18		
Special Deposits with Trustees, Various Mortgage Funds	27,438.78		
Cash and Securities in Insurance Reserve Fund...	10,044.35		
Sundry Accounts	963,655.84		
		1,194,796.67	
			14,109,546.28
Total			$258,205,221.08

LIABILITIES.

(Excluding Stocks and Bonds owned of The C. & O. Ry. Co. of Indiana.)

CAPITAL STOCK.			
Common	$62,792,600.00		
First Preferred	3,000.00		
Second Preferred	200.00		
		$62,795,800.00	
Common — The Chesapeake and Ohio Railway Co. of Indiana		1,200.00	
			$62,797,000.00
FUNDED DEBT.			
First Consolidated Mortgage, 5% Bonds.....1939	$29,858.000.00		
General Mortgage, 4½% Bonds 1992	48,129,000.00		
First Mortgage, Terminal, etc., 6% Bonds.....1922	142,000.00		
First Mortgage, R. & A. Division, 4% Bonds....1989	6,000,000.00		
Second Mortgage, R. & A. Division, 4% Bonds.1989	1,000,000.00		
First Mortgage, Craig Valley Branch, 5% Bonds...1940	650,000.00		
First Mortgage, Warm Springs Branch, 5% Bonds 1941	400,000.00		
First Mortgage, Kineon Coal Co., 5% Bonds.....1915	200,000.00		
First Mortgage, Greenbrier Railway, 4% Bonds..1940	1,859,000.00		
First Mortgage, Paint Creek Branch, 4% Bonds..1945	539,000.00		
First Mortgage, Big Sandy Railway, 4% Bonds..1944	4,672,000.00		
First Mortgage, Potts Creek Branch, 4% Bonds...1946	600,000.00		
General Funding and Improvement, 5% Bonds.1929	4,213,000.00		
First Mortgage, R. & S. W. Railway, 4% Bonds..1936	894,000.00		
First Mortgage, Coal River Railway, 4% Bonds..1945	2,499.000.00		
Convertible 4½% Bonds, 1930	31,390,000.00		
Secured Gold Notes, 4½%, 1914	19,500,000.00		
		$152,545,000.00	
Equipment Trust Obligations		6,623,699.25	
			159,168,699.25
First Lien and Improvement Mortgage, 5% Bonds (see Contra) 1930			22,468,000.00
			$244,433,699.25
WORKING LIABILITIES.			
Loans and Bills Payable..	$85,000.00		
Traffic Balances	270,278.88		
Audited Vouchers and Pay Rolls	3,813,411.28		
Unpaid Wages	84,941.46		
Miscellaneous Accounts Payable	147,484.56		
Interest and Dividends Unpaid	1,024,699.90		
Matured Mortgage and Secured Debt Unpaid.....	14,174.17		
Other Working Liabilities..	77,471.59		
		$5,517,461.84	
DEFERRED LIABILITIES.			
Unmatured Interest and Rents	$1,799,235.98		
Taxes Accrued	571,719.86		
Sundry Accounts	127,785.07		
		2,498,740.91	
			8,016,202.75
APPROPRIATED SURPLUS.			
Additions to Property through Income since June 30, 1907.....	$2,984,365.23		
Reserve Invested in Sinking Fund	511.01		
Reserve Invested in Insurance Fund	10,044.35		
		$2,994,920.59	
PROFIT AND LOSS BALANCE...		2,760,398.49	
			5,755,319.08
Total			$258,205,221.08

This Company is also liable as a guarantor of the following securities in hands of the public—

The Chesapeake and Ohio Grain Elevator Co., First Mortgage 4% Bonds due 1938.....	$820,000.00
Norfolk Terminal and Transportation Co., First Mortgage 5% Bonds due 1948	500,000.00
Western Pocahontas Corporation, First Mortgage 4½% Bonds due 1945	750,000.00
Western Pocahontas Corporation, Extension Mortgage No. 1, 4½% Bonds due 1945	83,000.00
Western Pocahontas Corporation, Extension Mortgage No. 2, 4½% Bonds due 1946	51,000.00
Louisville and Jeffersonville Bridge Co. Mortgage (C. & O. Prop'n, ⅓) 4½% Bonds due 1943.....	4,500,000.00
Richmond-Washington Co. Collateral Trust Mortgage (C. & O. Prop'n, ⅙) 4% Bonds due 1943.....	9,500,000.00

THE CHESAPEAKE AND OHIO LINES.
COST OF PROPERTY JUNE 30, 1912.

TABLE 4.

The Cost of Road as of July 1, 1911, was....		$162,874.368.29
ADDED FOR:		
Additions and Betterments during year ended June 30, 1912:		
Branch Lines	$236,779.22	
New Second Track	1,451,802.72	
Changes of Line and Grade.....	287,015.60	
Sidings and Yards	607,629.69	
Shop Buildings, Huntington, W. Va.....	1,511.31	
Shop Buildings, Tools and Yard, Silver Grove, Ky.	221,451.82	
Enlargement of Shops and Round House, Russell, Ky.	1,764.83	
New Power House, Covington, Ky.....	57,811.44	
Enlargement of Round House, Clifton Forge, Va.	9,969.73	
Electrification of shops, Clifton Forge, Va....	4,756.49	
Shops, Machinery and Tools.....	41,310.31	
Depots at various places.....	60,852.30	
Additions to Piers, Newport News, Va.....	19,450.08	
Freight Depot, Charlottesville, Va.....	6,100.81	
Water and Coaling Stations.....	65,982.35	
New Coal Pier, Newport News, Va.....	207.80	
Various Other Structures	40,648.28	
Telephone Lines for Dispatching Trains.....	50,200.45	
Interlocking, Block and other Signals.....	62,168.34	
New Bridges .....Cr.	39,292.19	
Ventilating Plant, Lewis Tunnel, W. Va.....	7,743,83	
Turntables and Engine House Facilities.....	28,550.61	
Fencing Right of Way.....	6,628.21	
Real Estate	172,274.02	
Land Damage Claims	1,870.91	
Improved Rail and Track Appliances.....	109,190.82	
Increasing width of Road-bed and Ballasting—Chicago Line	38,863.19	
	$3,553,242.97	
Purchase of securities of subsidiary companies.	3,000.00	
	$3,556,242.97	
LESS:		
Sundry Credits	6,207.22	3,550,035.75
Cost of Road, June 30, 1912.....		$166,424,404.04
The Cost of Equipment as of July 1, 1911, was		$33,044,306.89
ADDED FOR:		
Equipment purchased during year ended June 30, 1912:		
1 Passenger Locomotive	$25,614.05	
1 Mikado Locomotive	26,356.22	
10 Express Cars	59,062.76	
100 Flat Cars	72,173.12	
4 Flat Bottom Gondolas	4,479.47	
1 Wrecking Crane	13,348.50	
190 50-ton Coal Cars (from Island Creek Railroad)	169,756.71	
2 Passenger Cars (from Island Creek Railroad)	4,035.84	
3 Locomotives (from Island Creek Railroad)	34,001.92	
Improvement of Equipment.....	102,914.15	
	$511,742.74	
LESS:		
Value of Equipment retired:		
15 Locomotives $129,966.57		
342 Freight Cars 188,506.32		
16 Work Cars 8,447.70		
1 Car Float 16,500.00		
1 Float 7,858.98		
	351,279.57	
Total Additions for the Year.....		$160,463.17
Cost of Equipment, June 30, 1912.....		$33,204,770.06
Total Cost of Road and Equipment.....		$199,629,174.10
Amount deducted from Cost of Road and Equipment on account of difference between face value of securities auxiliary companies and the prices at which they were taken over		1,241,100.00
Cost of Road and Equipment June 30, 1912, as per Balance Sheet		$198,388.074.10

CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA RAILWAY COMPANY—THIRTY-FIRST ANNUAL REPORT.

REPORT OF THE BOARD OF DIRECTORS.

To the Stockholders of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company:

The Board of Directors submit herewith their report of the operations and affairs of the Chicago, Saint Paul, Minneapolis and Omaha Railway Company for the fiscal year ending June 30, 1912.

The mileage operated was 1,744.39, as follows:

	Owned.	Leased.	Total.
In Wisconsin	771.44	1.28	772.72
In Minnesota	434.33	38.71	473.04
In Iowa	74.54	27.50	102.04
In South Dakota	88.20	.....	88.20
In Nebraska	306.29	2.10	308.39
Total	1,674.80	69.59	1,744.39

The average mileage operated was 1,745.10.

In addition to the foregoing, the company owned and operated 119.85 miles of second track, located as follows:

In Wisconsin	93.91
In Minnesota	24.23
In Nebraska	1.71
Total	119.85

INCOME ACCOUNT.

OPERATING REVENUES.		
Freight revenue	$9,478,791.85	
Passenger revenue	4,551,593.86	
Other revenue from transportation	1,009,223.33	
Non-transportation revenue	95,817.04	
Total operating revenue		$15,135,426.08
OPERATING EXPENSES.		
Maintenance of way and structures	$1,684,548.31	
Maintenance of equipment	1,796,694.25	
Traffic expenses	320,889.24	
Transportation expenses	6,283,447.74	
General expenses	380,636.95	
Total operating expenses (69.15 per cent of operating revenue)		10,466,216.49
Net operating revenue		$4,669,209.59
OUTSIDE OPERATIONS (net deficit)		4,732.68
Total net revenue		$4,664,476.91
TAXES ACCRUED (5.17 per cent of operating revenue)		782,845.95
Operating income		$3,881,630.96
OTHER INCOME.		
Joint facilities, rents	$126,230.77	
Other properties—net income	31,209.98	
Dividends declared on stock owned	41,976.00	
Interest accrued on funded debt owned	11,880.00	
Miscellaneous	29,376.61	
		240,673.36
Cross corporate income		$4,122,304.32
DEDUCTIONS.		
Hire of equipment—balance	$66,043.17	
Joint facilities, rents	292,796.23	
Interest accrued on funded debt	1,649,028.85	
Miscellaneous	29,832.79	
		2,037,701.04
Net corporate income		$2,084,603.28
DIVIDENDS ON STOCK (7% on both common and preferred)		$2,086,910.00
Net Deficit for the year		$2,306.72

COMPARATIVE INCOME.

As compared with the previous year, the results were as follows:

Operating revenues, decreased		$957,425.28
Operating expenses, decreased		189,837.27
Net operating revenue, decreased		$767,588.01
Net deficit from outside operations, decreased		7,805.38
Total net revenue, decreased		$759,782.63
Taxes accrued, increased		52,038.40
Operating income, decreased		$811,821.03
Other income, increased		100,905.46
Gross corporate income, decreased		$710,915.57
Interest on funded debt, increased	$17,438.69	
All other deductions, increased	3,427.78	20,866.47
Net corporate income, decreased		$731,782.04

As is shown in detail elsewhere herein, the total Operating Revenue decreased $957,425.28. Over 85% of the decrease in Freight Revenue was caused by decrease in tonnage from the products of agriculture, due to poor crops in some of the States through which the lines of this Company run.

The operating expenses for the current fiscal year include $6,159,663.03 paid for labor, as compared with $6,067,572.05, paid during the preceding fiscal year, being an increase of $92,090.98, accounted for as follows:

Increase account higher rates of compensation	$128,766.95
Decrease account less time worked by employes	36,675.97
	$92,090.98

FREIGHT TRAFFIC.

The details of freight traffic for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Decrease Amount.	Decrease Per Cent.
Freight revenue	$10,563,204.36	$9,478,791.85	$1,084,412.51	10.27

	1911.	1912.	Percentage of Increase or Decrease.
Tons of freight carried	7,422,027	6,946,804	6.40 Decrease
Tons of freight carried one mile	1,171,703,024	1,982,173,586	6.79 Decrease
Average revenue received per ton	$1.42	$1.36	4.23 Decrease
Average revenue received per ton per mile	.902 of a cent	.868 of a cent	3.77 Decrease
Average distance each ton was hauled	157.87 miles	157.22 miles	.41 Decrease
Mileage of revenue freight and mixed trains	4,272,392	4,382,665	2.58 Increase
Average number of tons of revenue freight carried per train mile	274.25	249.20	9.13 Decrease
Average number of tons of revenue freight carried per loaded car mile	17.33	17.62	1.67 Increase
Average freight revenue per train mile	$2.47	$2.16	12.55 Decrease

Increased freight train mileage is incidental to very severe weather. Reduced train tonnage and earnings per freight train mile are due to decrease of agricultural products transported, which resulted in very large increase of empty return car mileage, instead of being utilized for load in both directions.

PASSENGER TRAFFIC.

The details of passenger traffic for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Increase Amount.	Increase Per Cent.
Passenger revenue	$4,475,419.11	$4,551,593.86	$76,174.75	1.70

	1911.	1912.	Percentage of Increase or Decrease.
Passengers carried	4,419,017	4,263,640	3.52 Decrease
Passengers carried one mile	233,136,695	220,979,696	5.21 Decrease
Average fare paid per passenger	101.28 cents	106.75 cents	5.40 Increase
Average rate paid per passenger per mile	1.920 cents	2.060 cents	7.29 Increase
Average distance traveled per passenger	52.76 miles	51.83 miles	1.76 Decrease
Mileage of revenue passenger and mixed trains	4,343,215	4,393,349	1.15 Increase
Average passenger train revenue per train mile	$1.21	$1.23	1.65 Increase

OPERATING EXPENSES.

MAINTENANCE OF WAY AND STRUCTURES.

The total operating expenses of the company for the year ending June 30, 1912, were $10,466,216.49; of this amount $1,684,548.31 was for charges pertaining to maintenance of way and structures. Included in these charges are $108,835.33 for rails, $171,234.00 for ties, and the cost of re-ballasting 81.28 miles with gravel and cinders, also part cost of replacing 1,738 feet of wooden bridging with permanent work.

During the year 8,338 tons of new steel rails and 6,968 tons of usable and re-rolled steel rails were laid in track, a greater portion of which replaced rails of lighter weight; 299,635 ties of all descriptions were laid in renewals.

The details of the charges to maintenance of way and structures for the year, compared with the previous year, were as follows:

COST OF RAILS.	1911.	1912.	Inc. or Dec.
New steel rail	$333,321.74	$244,835.32	*$88,486.42
Usable and re-rolled rail	114,971.82	138,466.60	23,494.78
	$448,293.56	$383,301.92	*$64,991.64
Less value of old rails and other items	369,561.63	274,466.59	*95,095.04
Net charge for rails	$78,731.93	$108,835.33	$30,103.40
COST OF TIES	286,115.35	171,234.00	*114,881.35
COST OF BALLAST	73,202.80	29,243.68	*43,959.12
COST OF OTHER TRACK MATERIAL	82,322.00	96,879.78	14,557.78
ROADWAY AND TRACK LABOR AND OTHER EXPENSES	772,645.68	723,779.96	*48,865.72
Total charges, Roadway and Track	$1,293,017.76	$1,129,972.75	*$163,045.01
Other Expenses Account of Maintenance of Way and Structures were as Follows:			
SUPERINTENDENCE	80,618.38	85,365.42	4,747.04
BRIDGES, TRESTLES AND CULVERTS	228,284.24	129,118.54	*99,165.70
ROAD CROSSINGS, FENCES, ETC.	52,031.43	45,264.00	*6,767.43
SIGNALS AND INTERLOCKING PLANTS	8,216.70	9,245.13	1,028.43
BUILDINGS, FIXTURES AND GROUNDS	*194,355.48	170,543.05	*23,812.43
DOCKS AND WHARVES	6,126.95	14,651.09	8,524.14
ROADWAY TOOLS AND SUPPLIES	15,381.92	16,399.73	1,017.81
MISCELLANEOUS CHARGES	87,360.66	83,988.60	*3,372.06
Total charges, Account of Maintenance of Way and Structures	$1,965,393.52	$1,684,548.31	*$280,845.21

* Decrease.

The foregoing expenditures for maintenance of way and structures for the current year amount to 16.10 per cent of the total operating expenses, as compared with 18.44 per cent for the preceding fiscal year.

MAINTENANCE OF EQUIPMENT.

The charges on account of maintenance of equipment for the year ending June 30, 1912, compared with the preceding year, were as follows:

	1911.	1912.	Inc. or Dec.
Locomotives	$782,338.45	$783,851.05	$1,512.60
Passenger train cars	208,431.11	213,680.26	5,249.15
Freight train cars	742,637.83	664,352.33	*78,285.50
Work equipment	24,364.98	25,890.35	1,525.37
Shop machinery and tools	28,260.06	31,279.64	3,019.58
Superintendence	54,346.40	58,462.03	4,115.63
Sundry miscellaneous accounts	23,604.95	19,178.59	*4,426.36
Total charges account of maintenance of equipment	$1,863,983.78	$1,796,694.25	*$67,289.53

* Decrease.

Transportation Expenses.

The transportation expenses for the year were $6,283,447.74 or 60.04 per cent of the total operating expenses. Of this amount $3,605,233.18 or 57.38 per cent, was for labor; $1,945,595.85, or 30.96 per cent was for fuel and $732,618.71, or 11.66 per cent was for supplies and other items.

The total increase in the charges as compared with the previous year was $127,831.30, distributed as follows:

Increase in amount charged for labor	$119,554.71
Increase in amount charged for fuel for locomotives	83,514.81
Decrease in amount charged for supplies and other items	75,238.22
Total increase	$127,831.30

EXTENSION OF LINE.

The extension of line from Black River Falls to a connection with the main line at Levis, Wis. (formerly Vaudreuil), a distance of 2.05 miles, was completed and placed in operation November 4, 1911.

SECOND MAIN TRACK.

The double-track line from Eau Claire, Wis., west, mentioned in last year's report, was placed in operation August 6, 1912. The line is 3.18 miles in length, and as compared with the old line, reduces the maximum grade from 1 per cent to .5 per cent, and the curvature 233° 33′.

The second main track between Merrillan and Wyeville, Wis., mentioned in last year's report, was completed and placed in operation November 2, 1911.

Work has been commenced on a second main track from a point 3.18 miles west of Eau Claire to Northline, Wis., a distance of 62.66 miles. In connection with this work the following changes in track are contemplated which will shorten the line 1,668 feet, eliminate four curves, reduce the curvature 112° 54′, and change the maximum grade from 1% to .5%.

Change of line at Knapp, Wis.
Change of line at Woodville, Wis.
Change of line and grade at Red Cedar River, Wis.
Change of line at Elk Mound, Wis.
Change of line at Hersey, Wis.

It is expected that the portion east of Hersey, Wis., about 35.12 miles, will be ready for operation during the fall of 1912.

SUNDRY ADDITIONS AND BETTERMENTS.

The following buildings mentioned in last report were completed during the year: Engine House, Machine Shop and Oil House, Omaha, Neb. (Joint with the C. & N. W. Ry.), depot at Craig, Neb. and addition to Machine Shop, St. Paul, Minn.

Depots were erected at Obert, Neb., Spring Brook, Wis., and Lake Wilson, Minn., and Passenger Depots at Black River Falls, Wis., and Norfolk, Neb., the two latter replacing structures now used exclusively as freight houses.

Steel water tanks replacing wooden structures were erected as follows:

River Falls, Wis.	Shell Lake, Wis.
Marshfield, Wis.	Valley Springs, S. D.
Cumberland, Wis.	Lake Wilson, Minn.

A 200-ton elevated coal chute was erected at Merrillan, Wis., and the coal chute at Millston, Wis., was torn down.

Automatic block signals were installed between Merrillan and Wyeville, Wis., a distance of 40.30 miles, and work is now in progress on similar signals between Wyeville and Elroy, Wis., a distance of 22.50 miles.

Contracts have been let for installation of automatic block signals between Eau Claire and Merrillan, Wis., 43.90 miles, and between Westminster St., St. Paul, Minn., and Northline, Wis., a distance of 21 miles.

Work was commenced on grading the property north of 20th Avenue, North, Minneapolis, Minn., for the erection of the following structures, which probably will be completed and ready for use this fall:

A 30-stall engine house, with turntable, heating plant, etc., complete, and connected therewith a building for machine shop, boiler room and coaling station.

A concrete wall was built along the bluff between Cliff, Minn., and Mendota, Minn., for a distance of 1,594 feet, to prevent erosion of the soft sand-stone and the consequent undermining of the track.

Interlocking plants were erected at Black River Bridge, Wis., and at Forest Street, St. Paul, Minn. (the latter joint with the Northern Pacific Ry.), and the plant at Wright, Wis., was moved to Levis, Wis.

BRIDGES.

The length of wooden bridging was decreased 1,738 feet, as follows:

By construction of permanent bridges	1,093 feet
By construction of concrete pipe culverts	645 feet
Total	1,738 feet

EQUIPMENT.

The following equipment was purchased:

2 passenger, 16 freight and 9 switch locomotives, 8 baggage, 4 postal, 2 combination, 7 first class passenger, 3 second class passenger, 10 caboose cars and one Lidgerwood unloader.

RESERVE FOR ACCRUED DEPRECIATION ON EQUIPMENT,

At the close of the preceding fiscal year there was a balance to the credit of the equipment reserve accounts of		$893,637.21
During the year ending June 30, 1912, there was credited to the equipment reserve accounts on account of charges to Operating Expenses, Profit and Loss, and for salvage		455,652.49
		$1,349,289.70
There has been charged during the year against the above amount the original cost of equipment retired as follows:		
1 Passenger train car	$3,500.00	
469 Freight train cars	266,715.76	
Other items	10,000.00	
		280,215.76
Leaving a balance to the credit of the equipment reserve accounts on June 30, 1912, of		$1,069,073.94

CAPITAL STOCK.

No stock was issued or sold during the year. The company's authorized capital stock is fifty million dollars ($50,000,000), of which the following has been issued to June 30, 1912:

Common stock and scrip held by the public	$18,559,086.69	
Common stock and scrip in treasury	2,844,206.64	
		$21,403,293.33
Preferred stock and scrip held by the public	$11,259,911.63	
Preferred stock and scrip in treasury	1,386,921.66	
		12,646,833.29
Total		$34,050,126.62

FUNDED DEBT.

At the close of the preceding fiscal year the amount of Bonds held by the Public was $30,047,000.00

For the purpose of defraying the cost of certain additions and improvements to the property of the Company and of additional equipment acquired, and to provide funds for future expenditures of like character, the Board of Directors, during the year, authorized the execution of an Indenture securing $15,000,000 of 5% bonds, known as Chicago, Saint Paul, Minneapolis and Omaha Railway Company Debenture Gold Bonds of 1930 to be issued from time to time as, in the discretion of the Board, the necessities of the Company in this respect may require.

During the year Debenture Gold Bonds of 1930 were issued, with the approval of State authorities, for additions, improvements and equipment to the amount of 5,000,000.00

Total Bonds held by the Public June 30, 1912 35,047,000.00

In addition to the foregoing, Chicago, Saint Paul, Minneapolis and Omaha Railway Company Consolidated Mortgage 6% Bonds of 1880 were issued in exchange for a like amount of the following underlying bonds retired, viz.:

Chicago, Saint Paul and Minneapolis Railway First Mortgage 6% Bond of 1878	$85,000
North Wisconsin Railway First Mortgage 6% Bond of 1880	5,000
	$90,000

There was no change during the year in the amount of Bonds and Scrip in the treasury of the Company:

Total Bonds and Scrip in the treasury June 30, 1912	$51,046.02

LAND DEPARTMENT.

The net receipts from all grants were $28,892.20.

6,741.38 acres were disposed of during the year, leaving 81,583.96 acres unsold, June 30, 1912.

Appended hereto may be found statements, accounts, and statistics relating to the business of the fiscal year, and the condition of the Company's affairs on June 30, 1912.

By order of the Board of Directors.

WILLIAM A. GARDNER,
President.

GENERAL BALANCE SHEET, JUNE 30, 1912.

1,674.80 Miles.

ASSETS.

Property Investment.		
Road and Equipment:		
Balance to debit of this account June 30, 1911	$65,394,648.42	
Add sundry construction and equipment expenditures for the year ending June 30, 1912	2,354,598.06	
		$67,749,246.48
Securities:		
Securities of proprietary, affiliated and controlled companies, unpledged		196,000.00
Other Investments:		
Advances to proprietary, affiliated and controlled companies for construction, equipment and betterments		8,300.00
Miscellaneous investments		184,595.82
		$68,138,142.30
Working Assets.		
Cash	$3,938,340.82	
C. St. P. M. & O. common stock on hand	2,844,206.64	
C. St. P. M. & O. preferred stock on hand	1,386,921.66	
Consolidated mortgage bond scrip due from Central Trust Company	1,046.02	
S. S. M. & S-W. Ry. Co. first mortgage bonds on hand	50,000.00	
Minneapolis Eastern Ry. first mortgage bonds on hand	75,000.00	

LIABILITIES.

Capital Stock.		
Common stock and scrip outstanding	$18,559,086.69	
Preferred stock and scrip outstanding	11,259,911.63	
		$29,818,998.32
Common stock and scrip owned by the company	$2,844,206.64	
Preferred stock and scrip owned by the company	1,386,921.66	
		4,231,128.30
		$34,050,126.62
Mortgage, Bonded and Secured Debt.		
Bonds outstanding	$35,047,000.00	
Bonds and scrip owned by the company	51,046.02	
		35,098,046.02
Working Liabilities.		
Traffic and car service balances due to other companies	$351,950.84	
Audited vouchers and wages unpaid	1,440,282.23	
Miscellaneous accounts payable	85,565.78	
Matured interest, dividends and rents unpaid	88,043.00	
Other working liabilities	17,022.82	
		1,982,864.67
Accrued Liabilities, not Due.		
Unmatured interest and dividends	$1,350,930.83	
Taxes accrued	465,903.86	
		1,816,834.69

GENERAL BALANCE SHEET—CONTINUED.

ASSETS—CONTINUED.

WORKING ASSETS—Continued.		
Minnesota Transfer Ry. first mortgage bonds on hand	183,000.00	
Bills receivable	1,955.83	
Traffic and car service balances due from other companies	113,473.17	
Net balances due from agents and conductors (including working funds)	408,971.32	
Miscellaneous accounts receivable	419,885.52	
Materials and supplies	1,135,156.36	
Other working assets	1,655.20	
		10,559,612.54
DEFERRED DEBIT ITEMS.		
Advances	$7,258.16	
Other deferred debit items	311,191.76	
		318,449.92
		$79,016,204.76

LIABILITIES—CONTINUED.

DEFERRED CREDIT ITEMS.		
Reserve for accrued depreciation	$1,069,073.94	
Unextinguished premium on funded debt sold	216,727.56	
Other deferred credit items	155,708.94	
		1,441,510.44
PROFIT AND LOSS		4,626,822.32
		$79,016,204.76

THE MISSOURI PACIFIC RAILWAY COMPANY.

ST. LOUIS, MO., September 10th, 1912.

To the Stockholders of

THE MISSOURI PACIFIC RAILWAY COMPANY AND THE
ST. LOUIS, IRON MOUNTAIN & SOUTHERN RAILWAY COMPANY:

The Board of Directors submit the following report of affairs for the fiscal year ended June 30, 1912.

The results of operation for the year were as follows:

	1912.	1911.	Increase or Decrease. Amount.	Per Cent.
Average Mileage Operated	7,230.77	7,234.75	—3.98	.06
OPERATING REVENUES:				
Revenue from Transportation—				
Freight	$39,514,355.87	$37,629,213.04	$1,885,142.83	5.01
Passenger	10,662,443.17	10,917,850.64	—255,407.47	2.34
Passenger—Other	196,006.14	171,823.81	24,182.33	14.07
Mail	1,429,607.72	1,431,553.73	—1,946.01	0.14
Express	1,374,454.41	1,178,618.85	195,835.56	16.62
Miscellaneous	891,224.79	1,004,221.67	—112,996.88	11.25
Total Revenue from Transportation	$54,068,092.10	$52,333,281.74	$1,734,810.36	3.31
Revenue from Operation Other than Transportation	435,157.82	443,310.86	—8,153.04	1.84
Total Operating Revenues	$54,503,249.92	$52,776,592.60	$1,726,657.32	3.27
OPERATING EXPENSES:				
Maintenance of Way and Structures	$8,664,769.03	$8,984,132.14	—$319,363.11	3.55
Maintenance of Equipment	8,321,786.50	8,283,520.67	38,265.83	0.46
Traffic Expenses	1,358,014.19	1,410,780.12	—52,765.93	3.74
Transportation Expenses	21,268,313.87	22,745,409.00	—1,477,095.13	6.49
General Expenses	1,667,708.42	1,906,094.46	—238,386.04	12.51
Total Operating Expenses	$41,280,592.01	$43,329,936.39	—$2,049,344.38	4.73
Net Operating Revenue	$13,222,657.91	$9,446,656.21	$3,776,001.70	39.97
Net Deficit from Outside Operations	120,852.76	86,082.47	34,770.29	40.39
Total Net Revenue	$13,101,805.15	$9,360,573.74	$3,741,231.41	39.97
TAXES ACCRUED	$2,243,379.97	$1,983,788.58	$259,591.39	13.08
Operating Income	$10,858,425.18	$7,376,785.16	$3,481,640.02	47.20
OTHER INCOME:				
Rent	$491,359.28	$267,224.65	$224,134.63	83.87
Dividends from Stock	315,466.00	649,722.00	—334,256.00	51.45
Interest	1,354,319.50	779,885.11	574,434.39	73.66
Miscellaneous Income	76,315.59	112,725.68	—36,410.09	32.30
Total Other Income	$2,237,460.37	$1,809,557.44	$427,902.93	23.65
Gross Corporate Income	$13,095,885.55	$9,186,342.60	$3,909,542.95	42.56
DEDUCTIONS FROM GROSS CORPORATE INCOME:				
Rent	$882,285.61	$578,043.72	$304,241.89	52.63
Equipment Rents—Debit Balance	746,367.21	1,409,499.37	—663,132.16	47.05
Interest	13,434,924.33	12,213,265.87	1,221,658.46	10.00
Miscellaneous Deductions	11,399.89	218,072.64	—206,672.75	94.77
Total Deductions from Income	$15,074,977.04	$14,418,881.60	$656,095.44	4.55
Net Corporate Loss	$1,979,091.49	$5,232,539.00	—$3,253,447.51	62.18
Operating Revenue per mile of road	$7,537.68	$7,294.87	$242.81	3.33
Operating Revenue per revenue train mile	2.07.466	1.98.014	.09.452	4.77
Operating Expense per mile of road	5,709.02	5,989.14	—280.12	4.68
Operating Expense per revenue train mile	1.57.134	1.62.571	—.05.437	3.46
Net Operating Revenue per mile of road	1,828.67	1,305.73	522.94	40.05
Net Operating Revenue per revenue train mile	0.50.332	0.35.443	.14.889	42.01
Ratio of Operating Expense to Operating Revenue	75.74%	82.10%	—6.36%	.....

CAPITAL STOCK.

There has been no change in the capital stock during the year.

FUNDED DEBT.

The funded debt increased during the year as follows:

THE MISSOURI PACIFIC RAILWAY COMPANY—		
Funded Debt	$4,000,000.00	
Equipment Trust Obligations	1,553,000.00	
TOTAL		$5,553,000.00
ST. LOUIS, IRON MOUNTAIN & SOUTHERN RAILWAY COMPANY—		
Funded Debt	$ 616,000.00	
Equipment Trust Obligations	1,544,000.00	
TOTAL		$2,160,000.00

Statements on Pages 21 and 27 give in detail the changes in the funded debt and equipment trust obligations.

The St. Louis, Iron Mountain & Southern Railway Company executed its First and Refunding Mortgage dated July 1st, 1912, to secure an issue of bonds limited to the aggregate principal sum of $200,000,000. The bonds so authorized mature July 1st, 1952, and bear interest from July 1st, 1912, at such rate or rates not exceeding 6% per annum as the board of directors may from time to time determine, payable semi-annually on July 1st and January 1st in each year.

Of the amount authorized by the mortgage $27,097,000 of bonds, or so much thereof as may be necessary, were reserved for cancellation and retirement of the $11,300,000 outstanding Improvement Bonds and of the Three-Year Note payable to The Missouri Pacific Railway Company for $8,500,000, and for reimbursing the Railway Company for expenditures for additions, betterments, etc., aggregating $6,000,000 heretofore made.

$134,389,000 of bonds, or as much as may be necessary, are reserved to refund bonds issued or issuable under existing underlying mortgages.

$5,928,000 of bonds are reserved to reimburse the Railway Company for payments made after July 1st, 1912, on account of its existing equipment trusts or agreements.

$10,000,000 of bonds, or as much thereof as may be necessary, are reserved to aid in refunding underlying bonds and in reimbursing equipment payments.

$22,586,000 of bonds are reserved for additional lines of railroads, extensions, branches, equipment, additions, betterments, etc., and the purchase of securities of controlled companies and securities of terminal companies.

By the retirement of the St. Louis, Iron Mountain & Southern Railway Company Improvement Bonds outstanding and the satisfaction of the mortgage under which the same were issued, the aggregate amount of the Missouri Pacific Railway Company's First and Refunding bonds that may be issued under the terms of its First and Refunding Mortgage is reduced from $175,000,000 to $150,000,000.

NEW LINES.

Construction of the line between Marianna and West Memphis, Ark., which was started in March, 1903, and temporarily abandoned in December of that year, has been actively continued during the year; but, owing to the extremely heavy rainfall and the overflow of the Mississippi River, it was impossible to make progress between February 1st and July 1st. The line will be 43 miles long and passes through a large hardwood forest section and affords a short low grade line to the south from Memphis. Track laying will be completed this fall.

A line 2.05 miles in length, connecting the tracks of the St. Louis, Iron Mountain & Southern Railway Company with those of the Marion & Johnston City Railway Company in the Illinois Coal District, was constructed during the year by the Johnston City Connecting Railway Company, both of these Companies being owned and operated by the St. Louis, Iron Mountain & Southern Railway Company. The line was placed in operation July 1st and will save a long and expensive detour in handling the coal traffic originating east of Herrin, Ill.

EQUIPMENT.

The following new equipment was purchased during the year, at cost of $6,374,388.71.

Under Trust Agreements—

50	Mikado Type Locomotives.
14	Pacific Type Locomotives.
1	Mallet Type Locomotive.
1	Gasoline-Electric Motor.
11	Steel Underframe Chair Cars.
8	Steel Underframe First Class Coaches.
2	Steel Underframe Partition Coaches.
15	Steel Underframe Baggage Cars.
13	All-Steel Mail Cars.
1	All-Steel Paper Car.
1000	Steel Undeframe Automobile Cars.
1000	Steel Underframe Box Cars.
900	Steel Underframe Stock Cars.
2000	Steel Underframe Coal Cars.
500	Steel Underframe Flat Cars.

Purchased for cash and built at Company's shops—

25	Locomotive Tenders.
1	Steam Ditcher.
1	Ballast Spreader.
6	Baggage Cars.

All of the above was received and taken into the accounts at June 30th.

Statements on Pages 46 and 47 show comparative inventory and capacity of equipment.

ADDITIONS AND BETTERMENTS.

The following are the more important items of addition and betterment work the total cost of which amounted to $4,112,525.25.

Embankments and cuts have been widened to standard width on 566.02 miles of road; 19.92 track miles laid with new 100-lb. steel, 322.13 with new 85-lb. steel, and 110.74 with released 75-lb. steel, replacing lighter sections.

Ballast applied as follows:

Gravel	181.74 miles.
Rock	4.59 miles.
Cinders and Slag	149.24 miles.
Chatts	206.84 miles.
Total	542.41 miles.

Revetment work, consisting of mattress, rip rap and top bank paving, has been done for protection against encroachment of the Missouri and Mississippi Rivers.

Grades between Atchison and Padonia, Kansas, have been revised to a maximum virtual 0.4%, together with correction of vertical curves. Between Gorham and Bush, Illinois, the revision to a 0.3% ruling grade in the northbound traffic is underway. The corrected lines will permit of substantial increase in train tonnage. Minor rectifications have been made at several points.

To comply with Government requirements, the double track steel bridge over Kaw River at Kansas City, Kansas, was extended 196 feet, shifted transversely and raised 6½ feet, to provide additional waterway. 1,296 lineal feet of other steel bridges were constructed, displacing trestles or iron bridges, and 11,815 lineal feet of trestles were filled, replaced by culverts, or partially filled.

Additional second tracks were completed:

Jefferson City to Cole Junction, Missouri	5.52 miles.
Wichita, Kansas, 12th Street to 25th Street	2.10 miles.
Poplar Bluff to Harviell, Missouri	8.18 miles.
North Junction, Illinois	.05 miles.
Bald Knob to McAlmont, Arkansas	48.01 miles.
Diaz to White River, Arkansas	4.71 miles.
Total	68.57 miles.

State Line and Cypress Yards, at Kansas City, Kansas, were raised 1 to 6½ feet to an elevation above high water line. Reconstruction of yards at Jefferson City, Missouri, were completed. Additional yard facilities installed at West Ivory, Missouri; Dupo, Illinois; Argenta and McGehee, Arkansas. Various passing sidings, industrial sidings and spurs were constructed or extended, making a net addition in side track mileage of about 79.83 miles.

Wire right of way fence was built to the extent of 743.84 lineal miles.

Grade crossings were eliminated by construction or completion of overhead concrete and steel viaducts at Compton Avenue, St. Louis, Missouri; South Side Boulevard and at South Main Street, Independence, Missouri; 7th Street, Argenta, Arkansas; 19th Street, Little Rock, Arkansas; and, a subway at 2nd Street, Argenta, Arkansas.

Interlocking plants were installed at Williamsville, Missouri, 22 levers; Paola, Kansas, 46 levers, and Lamar, Missouri, 20 levers; Diaz and south of Newport, Arkansas, 4 levers each, at end of second main track.

All the main lines of heavy passenger and freight traffic not heretofore protected are now operated under Manual Telephone Block. There were installed during the year 1403 miles.

Automatic block signalling was extended one mile.

Additional telephone and telegraph lines have been provided as follows:

Telegraph Circuits, Copper	1,659.33 miles.
Telegraph Circuits, Iron	25.17 miles.
Telephone Train Dispatching Circuits	30.75 miles.
Long Distance Telephone Circuits	644.11 miles.

New station buildings were constructed: of stone, 1; of brick, 4; frame, 18; and others remodeled or extended at twenty points.

For use on Sections, 253 motor cars, were acquired.

A new 95-foot brick, 27-stall engine house, with machine shop, was erected at Argenta, Arkansas. Early in the fiscal year, the extensive shop buildings were completed at Hoisington, Kansas; Falls City, Nebraska; and, East Bottoms (Kansas City), Missouri.

There was on deposit with Trustees June 30, 1912, $5,445,984.84 available for Additions and Betterments.

OPERATIONS.

The total Operating Revenues were $54,503,249.92, an increase, compared with previous year, of $1,726,657.32 or 3.27 per cent. The total equals $7,538. per mile of road operated (average).

The revenue from freight traffic increased $1,885,142.83 or 5.01 per cent. The tons of revenue freight carried increased 3.35 per cent and the revenue freight ton miles increased 9.15 per cent, which is reflected in the longer haul, the average having been 238.06 miles, an increase of 5.61 per cent. The average revenue per ton per mile was 8.24 mills, a decrease of 3.85 per cent. Table on Page 50 gives a comparative statement of commodities carried, the increased tonnage being in products of agriculture (other than grain), products of animals, bituminous coal and merchandise, and a decrease in grain, building material and manufactures.

The revenue from passenger traffic was $10,662,443.17, a decrease of 2.34 per cent, less local travel contributing the major portion of the loss. The number of passengers carried decreased 3.26 per cent. The number carried one mile decreased 5.16 per cent. The average distance traveled by each passenger was 39.16 miles, a decrease of 1.98 per cent. The average revenue per passenger was 90.16 cents, an increase of .95 per cent, and the average revenue per passenger per mile was 2.30 cents, an increase of .06 cents each.

Complete details of operating expenses, with comparisons, are exhibited on Pages 42 and 43, the total exhibiting a decrease of 4.73 per cent.

Notwithstanding a serious curtailment of the working season attributable to extraordinary weather conditions, particularly, floods in Arkansas and Louisiana, some of the lines in that section having been out of commission for a period of nearly three months, gratifying progress has been made in improving the roadway. Rail and tie renewals, widening fills and cuts, new and patch ballasting, and general track work, have been prosecuted to the utmost economical limit. The total expenditures for maintenance of way and structures aggregate $1,198.32 per mile of road. Cross and switch ties were renewed to the number of 3,739,242.

Extraordinary repairs were made to freight and work cars, the expenditure for which was nearly offset by a corresponding reduction in repairs of locomotives. Based upon the total number owned July 1, 1911, the average amount expended upon each freight car was $87.58, and on the same basis, repairs and renewals of locomotives equalled $2,987.41, and on passenger train cars $1,111.94.

Economies were effected, resulting in a reduction of about 3 per cent in Traffic Expenses.

Although passenger revenues declined, the passenger train miles for the year increased 4.94 per cent. The tons of revenue freight carried one mile increased 9.15 per cent, but notwithstanding the increased volume, transportation expenses were greatly reduced, despite the further fact that increases in rates of pay to various classes of employes, affecting these expenses, were in effect throughout the entire year as against a portion only of the previous year, the calculated difference in those wages being approximately $250,000.00.

The introduction of heavier power and the more efficient condition of equipment, roadway and appointments, enabled an improvement in train operation, the average tons of revenue freight per freight train mile having increased 14.47 per cent, and the loading per freight car mile 4.19 per cent. All of these items likewise contributed to a very decided advance in the character of the service rendered the public.

Charges for general administration were reduced 12½ per cent.

New industries, numbering 311 and representing an actual investment of nearly $11,500,000.00, were established on or adjacent to the right of way, and 122 industrial side tracks constructed.

The Company's Commissioner of Agriculture has actively extended the educational work of scientific cultivation and with continued satisfactory results.

Results of the administration of the Land Department are given on Page 55.

The improved financial condition of the Company is indicated by the annexed System statements of accounts, showing that upon June 30, 1912, the close of the fiscal year, there was no unfunded or floating debt other than the various obligations incidental to the current operation of the railroad.

It is believed that the close of the fiscal year established a conspicuous mile-post in the history of your property, for at that time the territory it serves was giving every evidence of revival, aroused by the promise of bountiful crops of every description, and in no small part due to the expansive activities of the communities in their own behalf and which in turn has brought those peoples into a closer association with and understanding of your Company's affairs. Such a marked advance could scarcely have been made without the substantial and efficient support of the officers and employes, in whose hands rests the immediate conduct of the business.

Local and federal enactments cumulatively have imposed burdens, of which the public gives evidence of having a growing realization, and which it is believed wise councils will eventually undertake to lighten. This lends further encouragement to what must be regarded as a gratifying outlook.

By order of the Board of Directors.

B. F. BUSH,
President.

THE MISSOURI PACIFIC SYSTEM.
PROFIT AND LOSS.
JUNE 30, 1912.
THE MISSOURI PACIFIC RAILWAY COMPANY.

Credit Balance, June 30th, 1911			$9,148,252.92
Delayed Income Credits	$47,735.74		
Profit on Road and Equipment Sold	13,050.00		
Miscellaneous Credits	297,777.97	$358,563.71	
Less:			
Deficit for year ended June 30th, 1912	$2,326,019.21		
Debt Discount Extinguished through Surplus	388,200.00		
Loss on Retired Road and Equipment	251,578.05		
Miscellaneous Debits	46,520.52	3,012,317.78	2,653,754.07
Credit Balance, June 30th, 1912			$6,494,498.85